AMERICAN BEE JOURNAL

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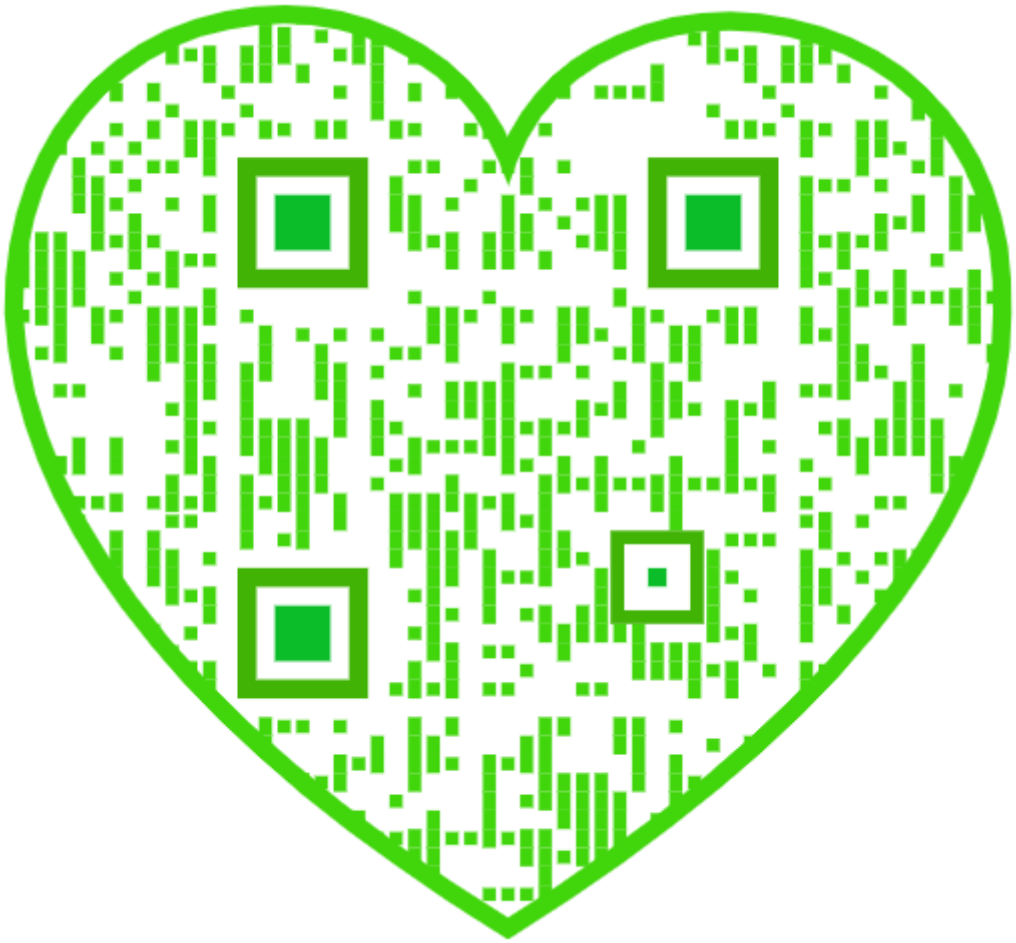
oft, Loose Snow Over the Entrance Can Do No Harm, But If It Melts and Freezes the Entrance Shut, Rshut, Jnds
It or the Bees are Apt to Suffer



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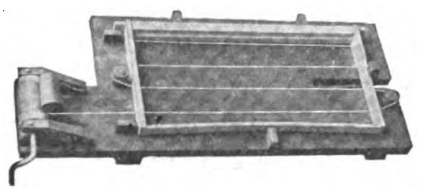

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Read what J. I. Parent of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog & price-list free

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Prices of one and over	1	6	12	25
Virgins	$ .50	$2.75	$ 5.00	$10.00
Untested	.85	4.50	8.00	16.00
Warranted	1.10	5.50	9.50	19.00
Tested	1.50	7.50	13.50	26.00
Breeders	3.00 and up to $10.00 each.			

1-frame nuclei without queen	$1.50
2-frame " " "	2.75
3-frame " " "	3.50

When queens are wanted with nuclei add queens at above prices quoted for queen

½ lb. package, wire cages, without queens	$1.00
1 " " " " " "	1.50
2 " " " " " "	2.00

If queens are wanted with pound packages add at prices quoted for queens.

On all orders amounting to $50 and over we will allow 5 percent discount, and orders amounting to $100 and over will allow 10 percent discount from above prices.

We guarantee safe delivery on queens, and safe delivery on bees that are not in transit over five days.

OUR REFERENCE—Any Mercantile Agency, A. I. Root Co., or American Bee Journal.

Get into communication with us at once and book your orders early to avoid disappointments in the spring.

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MADE IN U.S.A.
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Poultry supplies of all kinds, best automatic grain feedors, fountains, feed troughs, dry mash hoppers, bone mills, exhibition and shipping coops, leg bands, shell, grit, bone, meat, foods, and remedies ANYTHING YOU WANT. Also Pigeon, Kennel and Bee Supplies. Circular free.

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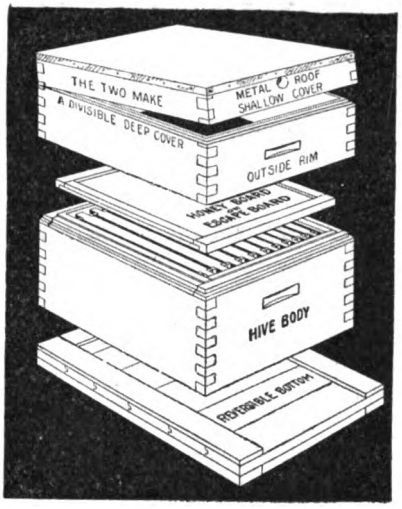

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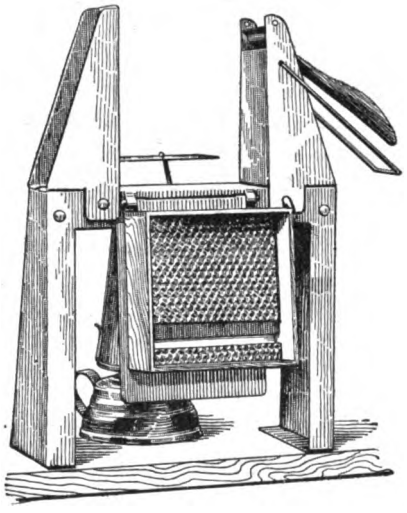
A. G. WOODMAN CO., Grand Rapids, Michigan



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H. W. Schultz, of Middleton, Mich., in writing us says: "Your Section Fixer is the best yet; can put up 150 sections per hour with top and bottom starters." Price with lamp $2.75. Shipping weight 5 lbs. Postage extra. Send for special circular, fully describing this machine.

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Smoke Engine, 4-inch stove	28 oz.	$1.25
Doctor, 3¼-inch stove	26 oz.	.85
Two larger sizes in copper extra.		.50
Conqueror, 3-inch stove	23 oz.	.75
Little Wonder, 2½-inch stove	16 oz.	.50

Hinged cover on the two larger sizes postage extra.

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Send this office $2.00 and get both postpaid

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20 Years of Select Breeding Gives Us Bees of Highest Quality

BEES FOR HONEY PRODUCTION—BEES OF UNUSUAL VITALITY

As we are large honey producers as well as queen breeders, producing from one to two carloads of honey annually, we have ample opportunity to test out our breeding stock, used in our queen yards. Thus we are able to guarantee that all our queens will give satisfaction in every respect. If you want bees that are gentle as well as great honey getters let us book your order.

SWARMS OF BEES BY THE POUND WITHOUT QUEENS READY APRIL 1

1-lb. pkgs. $1.25 each; 25 to 50 pkgs. $1.20 each; 50 to 100 pkgs. $1.15 each; 2-lb. pkgs. $2.25 each; 25 to 50 pkgs. $2.20 each; 50 to 100 pkgs. $2.15 each
3-lb. pkgs $3.25 each; 25 to 50 pkgs. $3.20 each; 50 to 100 pkgs. $3.15 each.

GOLDEN AND 3-BAND ITALIAN QUEENS READY APRIL 1

Untested.....75 cts. each; $65.00 per 100 | Tested.....$1.25 each; $110.00 per 100
Select untested.....90 cts. " ; $75.00 " 100 | Select tested 1.50 " 125.00 " 100

Write for descriptive price list. Let us book your order now. Only a small deposit required.

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The Double-Walled Massie Bee-Hive

Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate

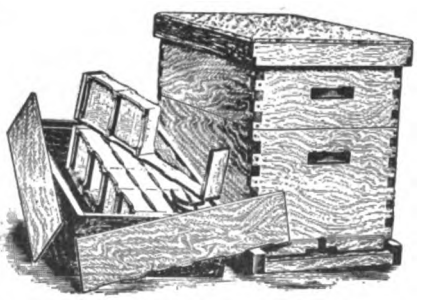
THE MASSIE HIVE
For Comb or Extracted Honey

Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracting Frames made from White Pine

VENTILATED BOTTOM

Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee-supply business has shown us that the **Massie is the very best hive,** and testimonials to this effect are received daily from those who are using this hive.



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Prices of Combless Packages Without Queens*

Size 1-lb. each	$1.35
" 2-lb. "	2.35
" 3-lb. "	3.35

Three-Banded Italian Queens for April, May and June

Untested, each	$ 1.00	Tested each	$ 1.50
" 6	4.50	" 6	8.00
" 12	8.00	" 12	15.00
" 100	65.00	" 100	100.00

Select tested, $2.00; breeders, $3.00

* In lots of over one dozen packages get our prices. If queens are wanted, add wholesale price and state kind.

Our Mr. A. B. Marchant has retired from the production of honey and will manage our yards for the package and queen trade Therefore, we will be in a better position to fill all orders with dispatch. Having doubled our capacity we believe we can fill all orders the day they are due. We have introduced new blood in all our yards, and we have a strain of bees second to none. Our packages are shipped the same day they are caged. Our bees for our packages are all reared above an excluder; therefore, we ship nothing but young bees, as young bees stand the trip better than older ones. We guarantee freedom from all diseases and safe arrival in the United States and Canada. Place your orders early, as first comes first served. Write for prices on large orders.

MARCHANT BROS., Union Springs, Ala.

Beekeeper's Guide, by A. J. Cook—This book on bees is also known as the "Manual of the Apiary." It is instructive and interesting, as well as practically scientific. It has 544 pages and 295 illustrations. Bound in cloth. Price, postpaid, $1.20; or with a year's subscription to the American Bee Journal, both for $1.80.

Biggie Bee Book.—This is a very small cloth-bound, well gotten up book. Its size is 4x5½ inches, and it was designed to be carried in the pocket of the amateur beekeeper. It contains concise information regarding the best practice in bee culture. Price, by mail, 50 cents, or with the American Bee Journal one year, $1.35.

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Shipping Cases for Comb Honey

Don't make the mistake of putting a fine lot of section honey in poor shipping cases. It will lower the price to you and damage your future sales. **"falcon"** cases are A No. 1, and will be a credit to any crop of honey. Prices are as follows:

Shipping Cases in Flat, Without Glass

No.		10	100
1	holding 24 sections, 4⅛x1⅞, showing 4	2 00	18 00
3	holding 12 sections, 4⅛x1⅞, showing 3	1 30	11 00
1½	holding 24 sections, 4⅛x1½, showing 4	1 90	17 00
6	holding 24 sections, 3⅞x5x1½, showing 4	1 80	16 00
8	holding 24 sections, 4x5x1⅜, showing 4	1 80	16 00

Shipping Cases, With Glass

Number and description	Nld	In flat, with 3-in. glass			With 2-in. glass
		1	10	100	100
11 Same as No. 1	35	.25	$2 30	21 00	20 00
13 Same as No. 3	.22	.15	1 40	12 50	12 00
11⅛ Same as No. 1½	.35	.25	2 20	20 00	19 00
16 Same as No. 6	.30	.22	2 10	19 00	.....
18 Same as No. 8	.30	.22	2 05	19 00	.....

Red Catalog, Postpaid **Dealers Everywhere** **"Simplified Beekeeping," postpaid**

W. T. Falconer Mfg. Co., Falconer, New York

Where the good bee-hives come from

Beekeepers' Supplies

Now is the time to order your supplies for next season, and have everything in readiness for next spring. Take advantage of the early order cash discounts, and send us a list of the supplies wanted, and we will be pleased to quote you. We will mail you our catalog upon request; in short, we handle everything a beekeeper requires for the proper conduct of an apiary—Root's goods at factory prices.

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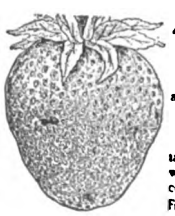
FOR

JOHN M. DAVIS

1917 Queen Prices

SPRING HILL, TENN.



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Tells about planting, pruning, spraying and selling fruit and garden truck.

Ask Us Your Hard Questions.

We conduct this department for the special benefit of our subscribers. Experts answer all questions by mail and through the columns of the magazine.

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BEE-SUPPLIES

Let Us Figure With You

We know we can satisfy you on price and quality. Write for catalog.

C. C. Clemons Bee-Supply Co.
Dept. S., Kansas City, Missouri

SUPPLIES FOR THE WINTER SEASON

Having purchased supplies early, I am able to sell the BEST DOVETAILED hives, five 8-frame 1½ story for $10, either super. Other hives and supplies. Let me figure on your wants. Italian Bees, Queens and Nucleus for the 1917 season.

E. A. LEFFINGWELL, Allen, Michigan

WHEN YOU BUY

Lewis Beeware

YOU GET

LEWIS QUALITY Which means that all Lewis Hives are made out of clear white pine, and Lewis Sections made out of fine bright basswood. Material in these goods is the best obtainable, selected by experts.

LEWIS WORKMANSHIP The Lewis Factory is equipped with the latest improved machinery, constantly watched by experts. The Lewis head mechanic has 40 years of bee supply experience; the superintendent of bee-hive department, 33 years; the superintendent of sections, 32 years. These and many other skilled men have a hand in all the Lewis goods you buy.

LEWIS PACKING All Lewis Beeware is carefully and accurately packed—a patent woven wood and wire package made only by the Lewis Company is employed largely in packing; this makes the package light, compact and damage-proof.

LEWIS SERVICE Years ago all goods were shipped direct from the factory with attending high freight rates and delays during the honey season. NOW Lewis Beeware can be obtained almost at your own door. Over 30 Distributing Houses carrying Lewis Beeware by the carload are dotted all over the United States and foreign countries.

G. B. Lewis Co., Watertown, Wisconsin

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OF LEWIS BEEWARE

AMERICAN BEE JOURNAL

Vol. LVII.—No. 1 HAMILTON, ILL., JANUARY, 1917, MONTHLY, $1.00 A YEAR

SEVENTY YEARS OF BEEKEEPING

The First of a Series of Articles By the Editor, Reviewing the Development of Beekeeping Since 1845

TO go back 70 years and view the scientific and physical world progress accomplished since then means probably more than any of us can realize at first thought. But it is only necessary to open any printed book, even a novel, dating back 70 years or more to appreciate the extraordinary physical change of conditions. Most of Dickens' stories, for instance, were written less than 80 years ago, but his characters traveled only in such conveyances as the post-chaise and the coach. Railroads came later. He knew nothing of telegrams, telephones, electric lights, bicycles, automobiles or aeroplanes. The sea traffic was so slow that it took from one to three months to carry the news of a battle from one hemisphere to the other. Kerosene oil was unknown, and house lights depended upon wax, lard oil or tallow dips. The postal systems were crude and clumsy until postal stamps were used, and this did not happen in England until 1840, and in this country until 1847, less than 70 years ago. In addition to the delay to get news from Europe, a letter crossing the ocean required 64 cents of postage. The International Postal Union was not created until 1874. The first successful transatlantic cable was not laid until 1866.

Seventy years ago we had no steam plows, no steam engines in fact, except very crude ones, no harvesting machines, no sewing machines, no type-writers. Steam-heated houses did not exist and bath tubs were luxuries found only in palaces or special houses. No automobiles ran on the then muddy roads of Europe. The inventors of flying machines were laughed to scorn in their unsuccessful attempts and threatened with the insane asylum for reward of their genius. One of the rare industries in which the conditions are still today very similar to those of 500 years ago is the shoeing of horses.

Is it any wonder then that beekeeping should follow the trend of all material progress? It is for a record of this progress and of the men who brought it about that this series of articles is now begun. We hope to entertain the reader while giving the student easy references to the work of the past.

It would be a mistake for us to imagine that books on beekeeping were rare before that time. Bastian, an Alsatian minister, in his book "Les Abeilles," published in 1868, gives a list of 664 publications, 24 of which were printed between the years 1568 and 1700. Of the others, 237 were published during the 18th Century. and the remainder during the first 65 years of the 19th Century. Four hundred and twenty-five of these publications were in German, 181 in French, 24 in English, 9 in Italian, 8 in Latin, and the balance in 6 or 7 other tongues. But even his list is not complete, for the writer of this owns several works which received no mention in it, being evidently unknown to Bastian. His largest lists are of German and French works, perhaps because he read and wrote those languages himself.

DZIERZON

The first periodical on beekeeping of which we find any record was published in Landshut, Bavaria, from 1838 to 1843, then discontinued. In 1845, the famous "Bienenzeitung" was founded in Nordlingen, Bavaria, and continued many years, though it is now out of existence, but replaced by many others.

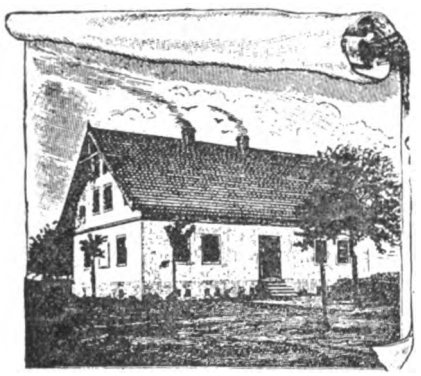
In 1845, Dzierzon, a Polish Catholic priest, of Karlsmarkt, Silesia, discovered parthenogenesis in queenbees, the faculty which they possess, in common with some other insects, of laying eggs that will hatch into male bees or drones, even though they have not mated. This discovery was the first real step forward since the time of Huber, and it was not accepted readily. The publication of Dzierzon's views by Schmidt, then editor of the Bienenzeitung, almost threatened the existence of this journal. But Siebold, Leuckart and Leidy, all microscopists and scientific beekeepers, studied it and confirmed it. The discovery was made under great difficulties, for the hive used by Dzierzon was just a "bar-hive," that is, its combs were hung on a plain top-bar without end-bars, so that at each visit the combs had to be cut away from each end of the hive-body before they could be taken out. To add to the inconvenience, as the hives were always placed in tiers, whether in doors or out-of-doors, probably to save space, they were made to open on the side and each comb had to be drawn out with pincers. If the third or fourth comb was wanted, the first two or three had to be first detached and drawn out. Yet Dzierzon became so accustomed to the handling of these hives that he used no other, even after movable frames were invented. The bar-hive is a very ancient invention.

Berlēpsch, a German, after having doubted or denied the possibility of parthenogenesis, became one of its warmest adherents, after thorough

trial. These men began the importation of Italian bees into Germany, which gave them the "proof of the pudding" so to say, for with the rearing of bees of a different color they were enabled to make sure of many facts.

Parthenogenesis may not seem of much importance to a beginner, but it was this discovery which enabled beekeepers to ascertain that the sons of a queen are true descendants of her race and that her mating does not influence their descent. It also explained why queens who have had no proper occasion to mate become drone-layers. It led to the more intensive cultivation of bees.

The time was now ripe for the invention of a practical hive. Though Dzierzon could get along with his bar-hive, there were already better hives in existence. Huber's leaf-hive, opening like the pages of a book, and the frames of which formed the body of the hive



Dzierzon's home for 95 years in Upper Silesia (From Gravenhorst)

at the top, bottom and ends, was the more practical of the two. But it left much to be desired. Propokovitch, a Russian, and Debeauvoys, a Frenchman, each invented a movable-frame hive, between 1841 and 1845, but neither of these hives was as practical as the bar-hive, because the frames originally were tight-fitting in the body or box which contained them, and the bees were sure to glue them fast at every point of contact which they could reach. They worked well only until the bees had been in them a few months. The Propokovitch had reversible frames, *i. e.*, they could be turned bottom side up, and this was deemed by him a great advantage. Reversible frames were re-invented some 30 years ago in this country and had a slight rush of popularity.

The Debeauvoys method and hive which were slowly improved seemed so enticing that his book had six editions, from 1846 to 1863, and a report was made concerning his discovery to the Royal Agricultural Society of Paris, in 1847. This was the first hive adopted by Chas. Dadant, and the writer remembers playing with discarded hives and frames of this system while a child, in their garden, in France.

Dzierzon himself wrote articles on beekeeping in different publications as early as 1844, but it was not until 1848 that he was emboldened to publish his first work on bees, "Theory and Practice of the New Bee Friend." A later edition, under the title of "Dzierzon's Rational Beekeeping," was translated by Charles Nash Abbott, of London, and is still a valuable book.

Beekeeping at that time was not immune from the troubles which hinder it at the present. The beemoth was dreaded more than now for apiarists did not know that a strong colony with a good queen is sufficient to prevent its depredations. Foulbrood, known for centuries, made terrible ravages, and to make it evident we need only to quote what Samuel Wagner wrote about Dzierzon's experience with that disease:

"In the year 1848, a fatal pestilence, known by the name of foulbrood, prevailed among his bees, and destroyed nearly all his colonies before it could be subdued; only about 10 having escaped the malady which attacked alike the old swarms and his artificial swarms. He estimates his entire loss that year at over 500 colonies. Nevertheless, he succeeded so well in multiplying, by artificial swarms, the few that had remained healthy, that in the fall of 1851, his stock consisted of nearly 400 colonies. He must, therefore, have multiplied them more than three-fold each year."

In our next article we will mention the invention of the practical hanging-frame hive and the progress begun about 1850.

Candy Feeding for Bees

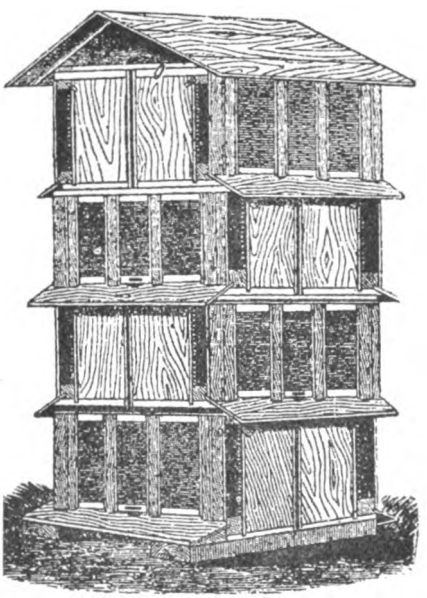
BY W. A. SHEPPARD.

A QUESTION that crops up here regularly every season is this: How late in the year can syrup be fed to the bees? In this section of British Columbia, when syrup feeding is necessary in the autumn, it is always advisable to get it finished by the end of September, so that the bees can store it in the combs and seal it over before the nights get too cold. Sometimes the weather during October is favorable for syrup feeding, but this is not to be depended upon, and it is therefore not safe to leave it so late. If the food is not properly sealed over when the bees go into winter quarters, diarrhea often supervenes, and if the colony does not perish outright in the winter it will be greatly depleted of bees before spring arrives, and the vitality of the survivors will have become lowered. Spring dwindling may then follow, and if the colony does not actually succumb it is usually unable to build up in time for the honey flow and a season is lost.

If syrup feeding is put off till too late, for any reason, properly made candy is the very best, in fact, the only well made substitute. Bees will winter on candy alone, but much care is necessary to make it of the right consistency. If it is too hard the bees cannot take it, and if it is too soft it will run down between the combs to the bottom-board out of reach of the bees. In either case starvation may result. One of the most reliable recipes for making candy is known as Brother Colomban's Formula, and is as follows:

"Into an enamelled pan, or preserving pan, put ten pounds of cane sugar (white crystals) and two quarts of hot water. Place over a clear, bright fire, and stir until the sugar is dissolved. When it begins to boil, draw the pan aside for a moment, and while it continues to boil slowly, remove the scum from the surface. This done, return the pan to the fire and *let it boil as fast as possible*, without stirring, for about 20 minutes. Test with a sugar boiling thermometer and boil until the temperature reaches 235 degrees, when the sugar will be sufficiently boiled; then stir in one teaspoonful of cream of tartar, boil for one or two minutes and remove from fire to cool. When the sugar has so cooled down that the finger may be kept in it for half a minute without scalding, then begin to stir, and continue to do so until the candy becomes white and stiff. The pan is now stood in another vessel, over the fire, containing hot water.

"In a short time the candy becomes more or less liquid, like cream, and an occasional stir must be given to dissolve all lumps. When properly dissolved and brought to almost boiling point (say 204 degrees Fahr.) pour it



THE DZIERZON HIVES IN TIERS

into molds or boxes and allow it to cool. To avoid over boiling, remove the pan from the fire while testing whether cooked enough. Also, to prevent mishap in another direction *i. e.*, boiling over, the pan used for making the candy should not be more than half full."

The following is a shorter candy recipe that answers very well, if the directions are strictly carried out:

"To ten pounds of white crystal sugar add one and a half pints of hot water, a quarter of an ounce of salt, and a teaspoonful of cream of tartar. Put whole in a stew-pan over a brisk fire and keep stirred until the sugar is dissolved. When it comes to a boil, draw the pan back so that it simmers gently for ten minutes, and as the scum rises skim it off. Then place the stew-pan in a larger vessel containing cold water and keep stirring until it is of the consistency of thick cream and pour into boxes or molds."

When candy is properly made it should be just soft enough to be easily scraped with the finger-nail after getting cold. When it is ready to pour out of the boiler, if boxes have not

been prepared ready for it, a very good plan is to line a deep pie-dish with brown paper and pour it into this. The paper will remain and prevent the candy from sticking to the coverings when on the hive. It is best to place it on the center of the frames over the ordinary feed-hole.

It may happen that in the fall the bees are only a few pounds short of the necessary amount of stores (25 to 30 pounds) to carry them through the winter, in which case a cake of candy may be put on the hive when packing them, to make up the deficiency without troubling to feed syrup at all. Candy may also be given to bees in the spring, and it is only suitable food until they begin to fly freely, when thin syrup may be substituted, if they are short of stores.

Candy is a very safe food early in the year, as it will not start robbing, as syrup sometimes does, which may result in the balling and loss of queens. Some beekeepers mix pea-flour or other pollen substitute with the candy used for spring feeding with good results, in districts where natural pollen is not sufficiently abundant. Several spoonfuls of pea-flour are stirred in just before the candy is ready to pour out into the molds.

Nelson, B. C.

Creating a Demand for Honey

BY T. P. ROBINSON.

THERE are advertisements galore for the sale of honey, but only two good ways of advertising practiced by the beekeepers at large. One, whose motive is to dispose of the honey as a commodity of commerce by any legitimate means, and the other is through education as to what honey really is, its great food value, its health-giving propensities, and its care and keeping. Sales made through the first medium are usually short lived while through the latter they are of lasting benefit.

There are many very intelligent people all around us who know nothing about honey. The average beekeeper has no means of finding out this great truth unless by chance he is thrown with a large number of people. Through the generosity of the Texas beekeepers and their State association I have been given a chance to study this problem first hand, as their superintendent at the State Fair at Dallas, Tex.

The benefits to be derived from such an exhibit are great. It is a known fact that the consumption of honey in the State of Texas is on the increase. When I first went to the fair to take charge of the exhibit many unexpected questions were brought up by the people at large, which greatly surprised me and which put me to a test to answer. The most unreasonable point raised was that adulterated honey was being bought in the open market. These complainants were numerous, many of them were prejudiced and determined, and insistent in their contention.

When these assertions were made I would ask them why they thought that it was adulterated, and they would usually answer in two ways: First, it was made out of sugar, they knew for the reason that it would quickly turn to sugar especially when it was placed in the refrigerator. Second, because the taste was nearly always different from what it used to be. To the first I would reply that the sugaring was a guarantee that their honey was pure since honey would do that when the temperature was lowered about it for any length of time. To the second I would explain that there were as many different flavors to honey as there were aromas to the different flowers, and the flavor of the honey partook of the nature of the flower from which it was gathered. To some I would offer a dollar for every pound of adulterated honey found in the market, but to secure the money I would require them to have witnesses to prove that the honey was just as received from the grocer. I would do this just as pleasantly and unconcerned as I possibly could, allowing the party to do his own thinking and form his own conclusions, and to finish it all off, I insisted that I really wanted him to bring the honey, for there was no one who wanted the adulteration stopped more than the beekeepers in the State of Texas, and I would consider it a personal favor for him to assist me in the clean up. There never was an offer of adulterated honey. From about two dozen per day six years ago, the criticisms have dwindled to less than a half dozen the present year.

I was really surprised that the public was so ignorant of honey. The sugaring idea and the different "taste" idea, as they termed it, were the great objections to honey, especially the former. These people were highly educated. Many of them were university graduates, public school teachers, and many more high school graduates. Realizing this I had leaflets printed, setting forth the flavors of honey, how to tell its purity, how to liquefy it when granulated, where to keep it, and fully explained its flavors and colors. I distributed these leaflets to any and all who thought tney would be benefited. The increase in consumption, to my mind, has greatly grown as a result of this campaign. Articles in the daily papers and farm papers that the general public read helped.

There is yet very much work to do along this line, and it behooves every beekeeper to take up this campaign of education to enlarge the sales of honey. Advertising by education is the right way to stimulate the use of honey, and it has the advantage of influencing the prospective customer to become a user of honey regularly rather than impress him for the time being that you have something to sell.

Bartlett, Tex.

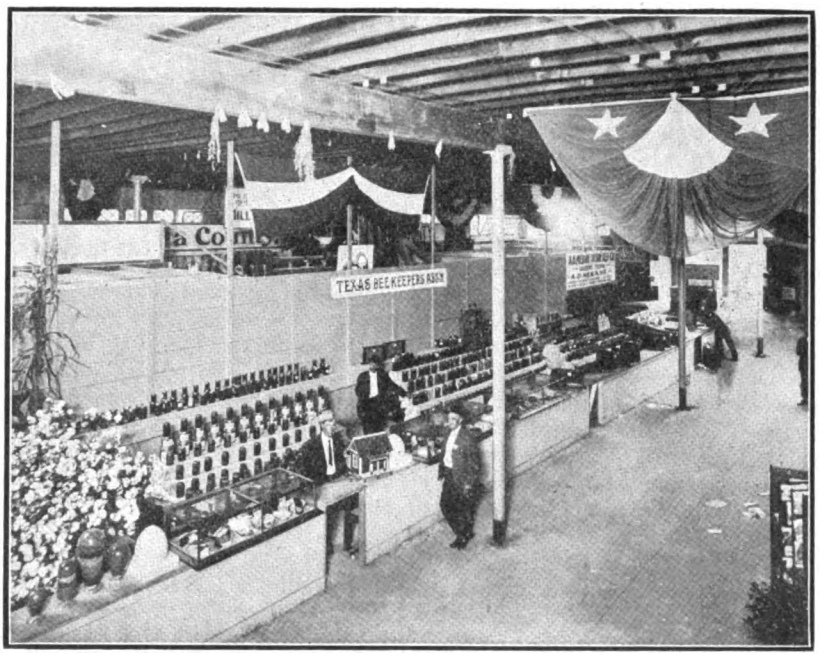


EXHIBIT OF THE TEXAS BEEKEEPERS AT THEIR STATE FAIR

A Remedy for Ants

BY C. E. FOWLER.

I WAS camping out and was very much bothered with medium sized ants in and around the camp. I had a tub about 15x20 inches and 6 inches deep, flaring sides. I dug a hole and put the tub in the ground, the top even with the ground. I put an inch of water in the bottom. The first day the water was covered with drowned ants. In three or four days, ants were very scarce, and in a week or two no more were to be seen.

I think the ants were thirsty and went down the slanting sides for water, and either could not get out of the water or else could not climb the tin sides. A pan, or several of them placed around the apiary, should serve the purpose without endangering the lives of any other animals. But it would probably be better not to let the bees drink the water with dead ants in it. A ¼ inch netting, or even a board covering the pan raised ½ inch would keep the bees out altogether.

Hammonton, N. J.

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Dr. C. C. Miller, Associate Editor.
Frank C. Pellett, Staff Correspondent.

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THE EDITOR'S VIEWPOINT

Comb-Honey Rates in the South

In the Southern Classification, comprising practically all the region south of the Ohio and east of the Mississippi rivers, there are no rates on comb honey in carlots, while less than carload shipments go at double first class.

Letters addressed to W. R. Rowe, of the Classification Committee at Atlanta, Ga., urging changes in the classification so as to have it conform with others, would have their effect in helping get the change.

The Honey Market

What a contrast this year from the same date in 1916! Extracted honey was offered at this time last year at ridiculously low prices both on the coast and in the local markets. This year extracted honey is at a premium whether it be light or amber. Last season amber honey was offered on the coast in carlots as low as 3½ cents to 4 cents a pound, while this year not a car can be had at present for less than 7 cents to 7½ cents per pound.

Now what are the contributing causes? In our opinion, one of the leading causes is the fact that California has a very short crop, and that the intermountain States, where extracted honey is produced, were also very short of honey this season. For instance, last year we were offered two carloads of white alfalfa honey by beekeepers in Idaho, and at a very low price. This year, these same beekeepers wrote us asking at what price we would furnish them a carload of white clover honey to supply their trade. The result of all this has been that extracted honey is now at a premium. One of the largest bottlers recently made a statement that he would pay an extra fancy price for a carload of white honey, no matter where it was secured. In fact, he felt sure that a carload could not be had anywhere.

The shortage of fruit is perhaps one of the greatest causes for the consumption of honey, and in our locality, as late as February, first class apples sold as low as 50 cents per bushel. This year there were no apples of any kind stored, and those which are shipped in are priced now at $1.50 to $2.00 per bushel.

The fact that there has been a tremendous amount of honey exported to the countries now at war is also a reason of the shortage of the honey supply and the high prices. Besides this, the advertising campaign made for Airline honey has brought the attention of consumers to the fact that honey is a food and not a luxury.

Although the middle West had perhaps the largest crop in its history, the fact that it was produced in a section which is very thickly populated, prevented the markets being flooded. Instead of white clover honey being shipped to distant markets, it was for the greater part consumed right where it was produced. In our own city there were a number of beekeepers who produced large crops, but these are now entirely sold out and grocers are demanding more honey from other sources. Although the middle West had the largest crop in its history, it was soon absorbed by the local market.

Our own crop of 125,000 pounds, two thirds of which was white clover, is very nearly all cleaned up, besides a larger quantity which we have had to buy to protect our customers, and we have sold it all at good prices. Beekeepers who sold at a low price earlier in the season are hardly to blame for letting go, however, as they had 1915 to look back to.

There is no doubt that this year's experience will cause a higher price for extracted honey in 1917. Even though there should be large crops throughout the country, the fact that the markets are cleaned up is bound to make higher prices for next year.

Regarding comb honey, the case is entirely different. There seems to be more comb honey on hand than the markets can well take care of. It must be remembered, however, that with the scarcity of extracted honey, the demand for comb honey is bound to increase, and we hope that before the new crop the comb-honey market will be almost as clean as the extracted-honey market.

A New Bee Paper

"The Beekeepers' Item" is the name of the new bee paper designed especially for developing the interest of beekeepers in the southwest. It is an 8-page monthly, and has a subscription rate of 50 cents a year.

The editor is Mr. Louis H. Scholl, one of Texas' largest beekeepers, and well known as a contributor to bee publications. He will be remembered as the champion and advocate of the divisible brood-chamber hives which he uses exclusively. He is also president of the newly-formed Texas Honey-Producers' Association.

There is a fertile field for such a paper in Texas and adjoining States, serving the purposes for which Mr. Scholl intends it. It will be devoted to disseminating news items and encouraging neighborliness and cooperation among the beekeepers of that great section, and will have as well an educational value. No doubt also that it will have no little influence in promoting legislation.

We wish the new paper and its able editor success. He should have the hearty support of all southwestern beekeepers.

The National Meeting

As announced in these columns, the National Beekeepers' Association will meet this year at Madison, Wis., on Feb. 6, 7 and 8. Any one who has attended the numerous State conventions during the past two weeks, probably will have met the president, Prof. Francis Jager, of Minnesota, and will have become as enthusiastic as he in regard to the coming National gathering.

The National seems to be coming into its own again, and with such men as Prof. Jager, F. E. Millen, N. E. France and others who are now working hard to make it stronger than ever, there is no doubt that it will become of inestimable value to the beekeepers. The work planned by Prof. Jager and his colleagues for the National during the coming year is quite extensive in its scope. Each topic will be discussed in turn at the convention.

The gathering together of data re-

garding the quantity of honey produced in the United States is in a large measure covered by the Bureau of Crop Statistics, but this bureau has nothing whatever to do with the prices secured by producers. It is the intention of the National to get definite information for the beekeepers regarding the quantity of honey they have on hand, size of packages, etc., and by offering it collectively to buyers, secure better prices than have usually been paid to the beekeepers individually.

Prof. Jager and Sec. Millen are acquainted with nearly all leading beekeepers throughout the country, and judging by what has been done in Minnesota and Michigan, we feel sure the National meeting will be one of the largest and best ever held. We urge, therefore, that every one who can possibly attend the convention do so and help make this meeting what a National Beekeepers' Convention should be.

Honorary Members of the Michigan Association

The Editor has been elected Honorary Life Member of the Michigan State Association, in company with Dr. C. C. Miller and Mr. A. I. Root. He feels very proud of the distinction and still more of the company in which he finds himself, with two of the oldest and most renowned beekeepers of America, who are his seniors in both years and experience.

What About that Home Market?

"I have sold all of my honey locally and could sell as much more if I had it." It is not an unusual thing to get letters with the above quoted phrase in them, even this early in the honey selling year. Unfortunately the majority of these beekeepers make no effort to supply that demand. It is these whom we wish to urge.

You should by all means make every effort to keep your customers supplied with honey at any time they want it. If you do not, what happens? Most assuredly the desire for sweets will be satisfied and they substitute, instead of the wholesome honey, the poorer articles on the general market throughout the year. The following year, they may have found a substitute which they think is as good as honey, and you lose a customer.

Nowadays it is not hard to find advertised a grade of honey which will rank in flavor with that of your own production, and you should be able to get it so as to make sales at the prices you have been getting for your own. If not, there is something the matter. Very possibly you have been getting too little for the honey which you sold yourself. Then, too, every pound of some one else's honey you dispose of will help relieve the tendency of over supply and help bring up the price.

Far and away the greatest reason why honey is not sold more readily today is because the majority of beekeepers, small and large combined, do not over-produce, but under-supply their customers.

Isle of Wight Disease

We acknowledge with thanks the receipt from Mr. John Anderson, M. A.; B. Sc., of the North of Scotland College of Agriculture, of two bulletins on the Isle of Wight disease in connection with *Nosema apis*.

The observations and experiments recorded were conducted mainly in Lewis, Outer Hebrides. This island, east of North Scotland, is at about the latitude of Juneau, Alaska, or above the 58th degree.

The conclusions reached in these bulletins do not agree with those of some other investigators, for the writers do not charge the *Nosema apis* as being the cause of Isle of Wight disease. It is only sufficient to quote the statement made on page 51 of the "Observations and Experiments":

"Our main conclusion regarding *Nosema apis* is that so far we have been unable to recognize any casual relation between the presence of this parasite and the disease. We have found it to be present over prolonged periods in healthy stocks, while we were unable to find it in other stocks in the apiary, nor did Isle of Wight disease spread under these conditions although various races of bees were present. Deliberate infection of a stock with *Nosema* did not produce the disease. It is well established also that the disease occurs where the parasite cannot be found. We have numerous instances of this on Deeside."

This much debated question will sooner or later be settled by further evidence. Errors occur in observation as well as in diagnosis. But very few scientists are unwilling to give up to evidence, when it becomes flagrant. Time will clear the now obscure question. Isle of Wight disease, as well as our mysterious "bee paralysis" and "May disease," will soon be classified and controlled.

Weight of Bees

The Beekeepers' Review, in its October number, page 370, contains an interesting article by O. L. Hershiser, in which he gives the weights of worker-bees and drones. He figures 5088 workers or 2528 drones to a pound. B. F. Koons, in the "A B C of Bee Culture," gives about 5000 workers or 2000 drones as weighing a pound. An old and very accurate writer on bees, L'Abbé Collin, in 1865, gave the number of drones as they leave the hive for a flight at 1925 to a pound, while the number of drones coming home from a flight was 2070. Inversely, the workers are heavier when they come home than when they fly out.

From all this it appears that drones are at least twice as heavy as worker-bees. They certainly cost fully twice as much to rear. Hence, the advisability of limiting their numbers, except in select colonies that are desirable for breeders.

Changes Proposed in Iowa Law

In his annual report which has recently been filed in the governor's office, Frank C. Pellett, the Iowa inspector of bees, proposes that the law be so changed that the office be placed in the extension department of the Agricultural College. In this way the appointment will be taken out of politics, and it will be possible to change inspectors at any time instead of waiting for a term to expire in case conditions are unsatisfactory.

As proposed, the law will be drawn to permit inspection as at present upon call of the beekeepers, but will provide for enforcement of the provision requiring proper attention to diseased colonies, by another officer rather than by the inspector. Apiary demonstrations similar to those now conducted in Ontario will also be provided for. It is proposed to require all the inspector's time for work in bee diseases, development of markets, etc. There are several advantages which will accrue if the change is made. The beekeepers in attendance at the Iowa convention approved the proposed change without dissent.

The inspector suggested that the present law places too much power in the hands of one man, and that while the inspector's orders should be carried out, it should be possible for the owner of the bees to have some kind of an appeal to prevent unjust injury in case of a mistake in diagnosis or of prejudice on the part of an officer.

This is the fifth year that Mr. Pellett has served in the capacity of State bee inspector of Iowa, and he proposes to retire from the work to devote his entire time to his bees and to his work for the American Bee Journal and other magazines.

Field Book of American Wild Flowers

This office is in receipt from the publishers, of a 600-page book entitled, "Field Book of American Wild Flow-

ers," by F. Schuyler Matthews, a book which would be an addition to any beekeeper's library, since it contains a very full description of the flowers of this country besides having 24 colored plates and over 300 other engravings of flowers. The book is of a size that fits readily into the coat-pocket which makes it a ready reference on any desired excursion.

The flowers are arranged in the book by families, with full scientific names given, while the index, a very full one, gives not only the scientific but the common names as well. It would be hard to find a book so compact in form, yet giving so much valuable information on our native wild flowers.

The price of the "Field Book of American Wild Flowers" is $2.00, and the publishers are Messrs. G. P. Putnam's Sons, New York City. The book wrapped for mailing weighs two pounds.

Y. M. C. A. Course in Beekeeping

The Y. M. C. A. of Louisville, Ky., is perhaps the only association of this kind to give a course in beekeeping. In our August, 1915, number, page 263, we gave a short mention of this course and a photograph of the class.

The editor has lately spent a week in Louisville, and was given an opportunity to become acquainted with the men in charge, W. H. Lippold, director, and J. O. Dunkin instructor in beeculture. The course occupies about ten days and covers the most necessary information, equipment, handling bees, natural history of the bee, swarming, robbing, diseases, honey production, feeding and wintering.

The example set by this well-managed association is worthy of imitation. Many a small wage earner around cities can add to his income if he learns how to produce honey efficiently and profitably. We will follow the progress of this Louisville Course and will again mention it at some future day.

Vaseline for Burr-Combs

G. S. Oettle, writing in the South African Poultry Magazine, advises the use of vaseline on top bars of frames to prevent the building of burr-combs. He also states that "all exposed parts of supers, etc., should be vaselined on the bottom edge. Will some of our subscribers try this and report results?"

Asters?

Rev. M. W. Millard sends a specimen of a purplish-blue flower upon which his bees work as if they were crazy. A few sprigs that he brought a few years ago from East Tennessee, where it grows in yards and gardens, have spread into a clump six feet in diameter. The bees appear to get no pollen from it, only nectar, and work on it from its first appearance in September, until after hard freezing. He thinks it can hardly be an aster, is spite of appearance, since it multiplies only by the spreading of the roots, and matures no seed.

It is possible he may be mistaken as to its being anything but an aster. The flower certainly looks like an aster. Plants behave differently in different localities, and it is rather remarkable that in the northern tier of counties in Illinois, while asters grow abundantly they are of little or no value to the bees, while in some places, as in the present case, they yield abundantly. It seems a little puzzling, however, that they should not mature seed where they yield so much nectar. C. C. M.

Swedish and Dutch Bee Papers

For some months we have been receiving, in exchange for our own Journal, copies of bee papers from both Sweden and Holland. We would be glad to get in touch with subscribers acquainted with either the Swedish or Dutch language with a view of having such important articles as appear in those papers translated for the American Bee Journal.

AMONG EASTERN BEEKEEPERS

The Third of a Series of Articles by C. P. Dadant on His Trip Through a Portion of the East

THE day following the Boylston meeting was Sunday, Aug. 6, and Dr. Gates and I spent it in Boston, seeing sights, and especially the historical sights. Bunker Hill and Charleston Heights disappointed me. Faneuil Hall is just what its pictures represent, a very old building in the center of the market quarters. But the Paul Revere ride, Concord and Lexington battle fields are just what one might expect, very interesting. Boston has a few sky scrapers. I wish they could keep them out. The city was full of tourists and the roads were lined with sightseers.

Back to Worcester, we started from there for Amherst, on Monday, Aug. 7. We had two days before the next field meet at Springfield. This was my opportunity to visit the College of Agriculture.

Amherst is on the slope of a valley overlooking the Connecticut river. Like all New England towns it has beautiful shade trees. Two colleges, Amherst and the Agricultural State University, give this small borough a distinctly refined air. Of course, the greater part of my time was spent in Dr. Gates's office and in the apiary. His bee library is the richest I have ever seen, numbering over 900 volumes, exclusive of the magazines on bees. The oldest work in the collection is an Italian work, published in Castel Sant-Angelo in 1539, entitled, "Le Api di M. Giovanni Rucellai." He has also two copies of quaint old Butler's work published in England in 1623 and 1634.

In the implement museum, composed mainly of modern devices, I saw Mr. Langstroth's original observing hive and a queen-mating nucleus, also from him, both old and weather-beaten.

In the wax-rendering room, located in the basement of the Entomological building, I saw some very ugly-looking slum-gum, from which all the wax had been extracted which could be secured by present methods, and which I was told contained still, according to analysis, a large portion of its weight in beeswax. I do not see how more wax could have been secured from it.

The college apiary and building are in a fine spot, under the supervision of Mr. J. L. Byard. I will speak of it again later, for I had occasion to come back to Amherst.

I also wish to mention my visit with Dr. and Mrs. Paige, who took me around one evening along the numerous tobacco and onion fields of the vicinity, for these two crops are staples, tilled by foreigners, mainly Poles. Dr. Paige is State Veterinarian, and his museum of veterinary science is valuable. I there learned that cows sometimes foolishly eat old white lead paint, or paint brushes, or painted rags which may have been carelessly thrown away. This often kills them. A rag full of paint, the size of a man's fist, taken out of the stomach of a cow, was on exhibit. So, friends, don't leave any old paint where cows may reach it.

On Wednesday the 9th, Dr. Gates and I went to Springfield and traveled through the Holyoke hills, following the Connecticut river which passes between Mount Tom and Mount Holyoke. The woods are delightful, being part deciduous trees and part evergreens. But I was sorry to learn that the chestnut trees are fast disappearing, killed by some kind of blight. Entire groves of them were dead or dying. The weather was pleasant, but truth compels me to say that there are just as sudden changes of temperature in New England as in the middle West. At times my light summer clothes proved in-

sufficient and a sweater was welcome.

At Springfield, the meeting was held in the yard of Mrs. A. A. Packard, a very pleasant lady beekeeper. The president, Mr. O. M. Smith, spoke of this association being composed mainly of small producers and amateurs, many of them horticulturists. It is in that section of country that many bees are reared for the use of florists and gardeners, especially for the hot-house cucumber growing. Another lady beekeeper, Mrs. A. H. McCarter, had a very interesting essay on "Helping the Beekeeper."

Among things exhibited at this meeting, Mr. X. A. Reed displayed candy in paper plates. The candy is poured into them while hot. It is a very good method for easy handling.

As the next meeting was to be, the following day, at Dalton, near Pittsfield, Mass., Dr. Gates and I started as early in the evening as we could, to travel the distance, about 70 miles. We passed through "Jacob's Ladder" in the winding roads of the Berkshire hills, gentle slopes up immense timber-covered hills and down again on the other side. We passed through Lenox, a small village surrounded with the summer homes of numerous millionaires, all fine estates. We arrived at Pittsfield quite late, about 9 p.m.

The next morning, it was but a short run to Dalton, to the Berkshire County Field Meet on the estate of ex-Senator W. M. Crane. The renowned Crane linen bond paper is made here and we spent a half hour or so visiting the factory.

The bee-meeting had been arranged by Mr. H. C. Schmeiske, head gardner and beekeeper for the Crane estate. Mrs. Crane was present with a few friends during a part of the meeting and very graciously tendered to us the freedom of the grounds.

Although President Musgrove and Mr. Ralph Ely gave very entertaining talks, the success of this meeting was due especially to the energy of Mr. Schmeiske, who, though small in stature, has a very large heart and wonderful energy.

At the apiaries of Flintstone farm belonging to F. G. Crane and Harry Hume, I saw very white comb honey in sections and learned that much of it is produced from wild thyme, which blooms from Aug. 1 until frost. Dr. Gates assured me that the honey of the Berkshire hills compares favorably with that of any other spot in the United States.

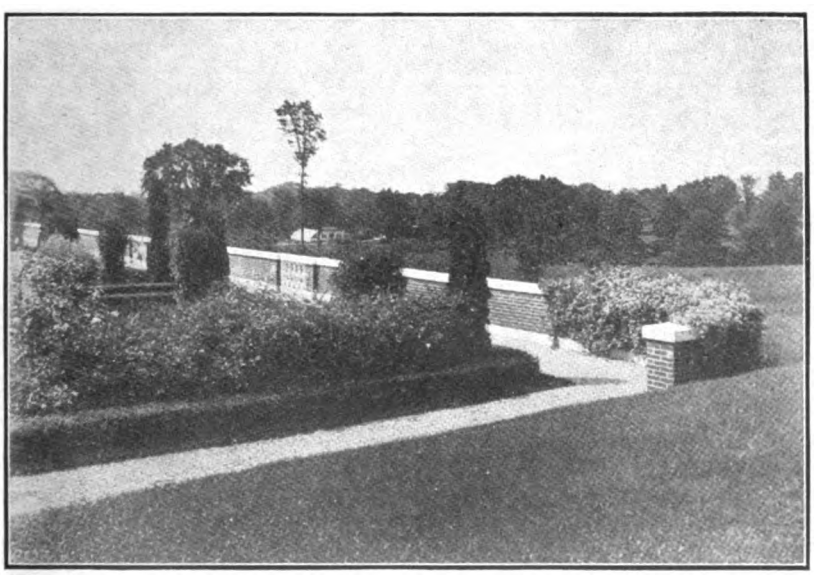
I must hurry on. Still I will linger long enough to speak of a statement of Latham, which I have not yet mentioned and which we discussed to some extent at this meeting. Latham asserts that, in combat between a laying queen and a virgin, the virgin is *always* the winner, because of her greater agility. Dr. Gates says this is not always so and that he knows of instances where the fertile queen won. How is this?

At 5:00 p.m. we left for Albany, 36 miles away, for we had another meeting to attend the following day, Aug. 11, at Altamont. The weather was exceedingly cool, and the north wind blew a strong breeze among those Berkshire hills. It was lucky for me that I had a light sweater to wear. We found the main road closed at different spots, owing to repairs, and the detours caused us to travel 55 miles instead of the 36. We were caught in a hard shower. But a good top to the auto and the water-proof roads on which we traveled made the shower insignificant.

We reached the Hudson river at Rensselaer, and crossed to Albany at 7:30, at dusk.

Altamont. The meeting of the Eastern New York Beekeepers at the apiary of W. D. Wright, president of that Association, had an attendance of some 50 beekeepers. It was called to order by Mr. Davenport, its industrious secretary. Here is the center of the large honey production of the East, for they have white and alsike clover, sweet clover, many wild blossoms and immense fields of buckwheat for fall pasture. Only 10 miles away was the home of the famous Alexander, who kept as many as 700 colonies in a single apiary. His son still continues the business and attended the meeting. I also met N. D. West, of queen-cell protector fame, a very expert beekeeper, and inspector Chas. Stewart, another well-known inspector, and dozens of other large producers. There were 16 to 18 ladies present, a fair number, although this record was to be beaten at the Adirondack meeting, where half of the attendance were ladies.

THE CRANE ESTATE. MRS. CRANE TENDERED TO THE BEEKEEPERS THE FREEDOM OF THE GROUNDS



THE CRANE ESTATE WHERE THE BERKSHIRE BEEKEEPERS' MEETING WAS HELD

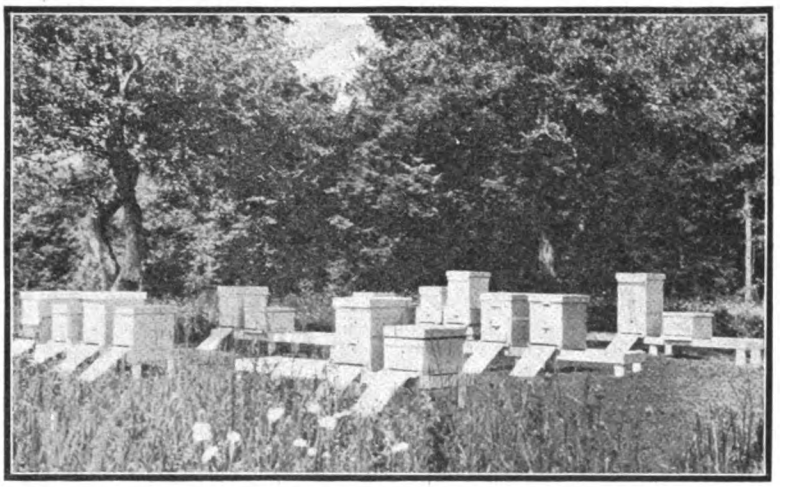
The bees were working very strongly, at the Wright apiary. Mr. Wright has a very simple way to increase the entrance and ventilating opportunities of the strong colonies. He simply draws the hive forward on its bottom-board until it projects beyond it four or five inches, more or less, according to requirements.

Mr. West stated having had a surplus of 1300 pounds of dandelion honey, one year, and that it granulated very readily. Mr. Stewart spoke of fruit

bloom honey also being prompt to granulate. Neither of these products is ever harvested in sufficient quantity in Illinois to make a test.

The question of the cost of comb to the bees was raised and the opinions expressed varied between 10 and 20 pounds of honey for each pound of comb. This is far from the French writer Sylviac, who claimed that the cost rarely exceeds two pounds of honey, in favorable circumstances. But those men are experienced and I believe their opinion is based on plausible grounds.

It will interest our readers to learn that Mr. Wright is one of the pioneers of American beekeeping. In 1871, when only 20 years of age, he described in the American Bee Journal (November, 1871, page 110), a home-made honey extractor, the tank of which was made of wood coated with beeswax. The honey extractor was then a novelty and was not yet manufactured for sale. Mr. Wright was also for several years one of the officers of the National Association.



FLINTSTONE FARM, DALTON, MASS., ESTATE OF F. G. CRANE
Apiary of Ralph A. Ely

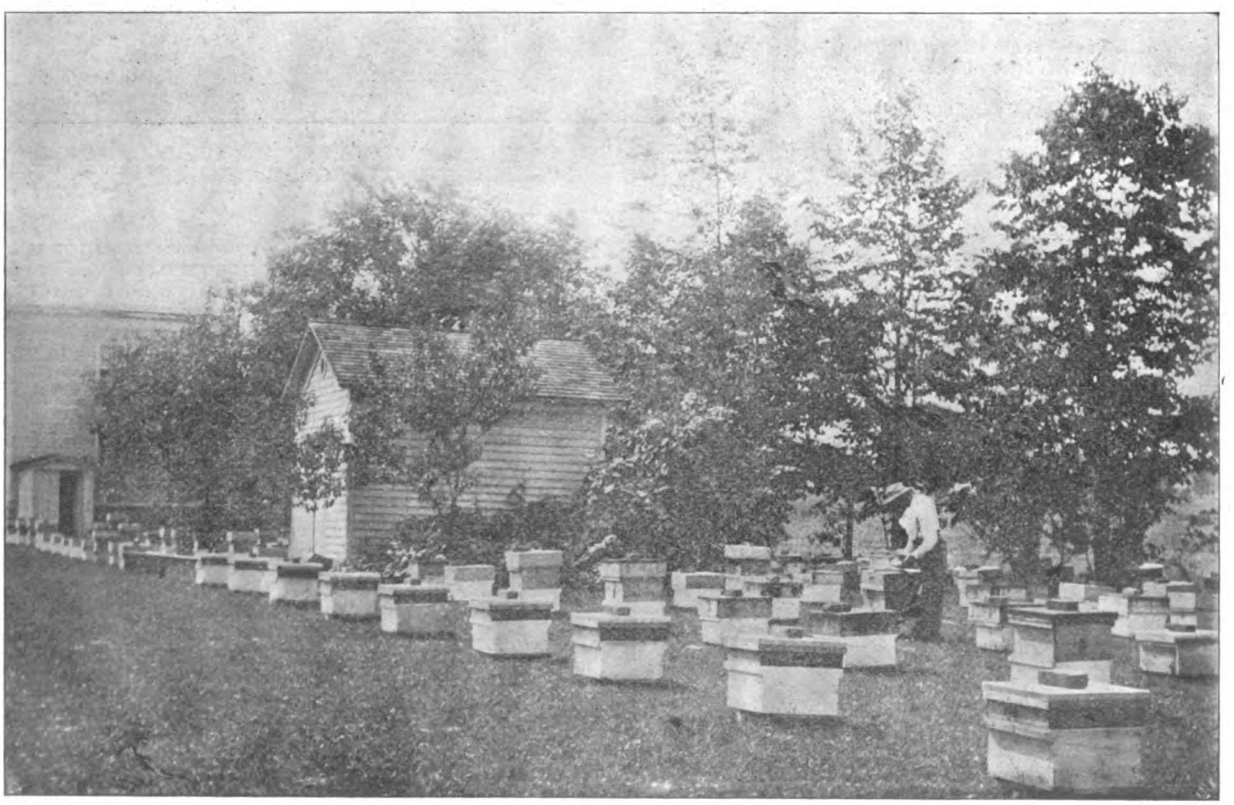
The Importance of Bees in Horticulture

BY L. H. PAMMEL.

THE importance of bees in connection with the production of fruit has long been recognized. Without bees we would have very little fruit, very little alfalfa or clover seed.

Dr. Joseph Gotlieb Kolreuter, a German naturalist who studied the hydridization of plants from 1761 to 1766, made some observations on the pollination of plants. In one of his treaties he says, "Experience has taught me that this, which has long been asserted concerning the fig tree, is true of many other plants, some of them very common. In all cucumber plants, in all sword lilies, and in not a few plants of the meadow family, pollination of the female flowers and stigmas is effected by insects. I was amazed when I made this discovery in one of these plants for the first time and saw that nature had left so important a matter as reproduction to a mere chance, to a fortunate accident. My amazement was gradually converted, however, by prolonged observation, to admiration of the means, at first sight casual, but in fact most rare which the wise Creator employs to secure reproduction."

A second German, Konard Sprengel, made a large number of observations on flowers. He says in his preface, "In the summer of 1787, while I carefully watched the flower of the wild geranium (*Geranium sylvaticum*), I found that the bases of its petals were provided on the inner side and on both edges with fine soft hairs. Convinced that the wise Creator of Nature has brought forth not even a single hair without some particular design, I considered what purpose these hairs might serve." Then he discusses how these hairs prevent the nectar from being worked out by the rain. He made many observations on the plants of Germany, 500 species in all. He made this remarkable statement: "It seems that Nature is unwilling that any flower



HOME APIARY OF W. D. WRIGHT, AT ALTAMONT, N. Y.

should be fertilized by its own pollen." Thomas Andrew Knight, in 1799, made this statement: "No plant fertilizes itself, through many generations." This conclusion was drawn from his experiments. Darwin's first work in connection with the Leguminosæ (1858) indicated that seeds were not produced as abundantly where the insects were excluded from flowers by means of a net, and in his work on the "Fertilization of Orchids," he says: "Nature tells us in the most emphatic manner that she abhors perpetual self-fertilization;" a statement too strong because there are many plants which continuously fertilize themselves.

Let us take a few illustrations to show how important bees are to plants in the production of seed.

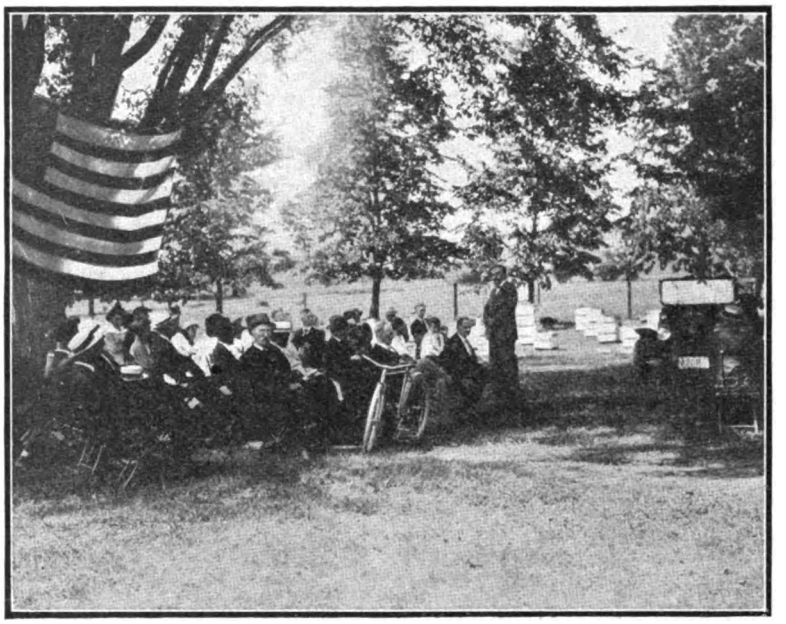
We may use the red clover as an illustration. Darwin estimated that 100 heads of red clover bear about 2720 seeds. He covered 100 heads to keep bees out and found that no seeds were produced. He asserted that the clover could not fertilize itself. Some experiments made at Ames under my direction by Mr. H. S. Coe, show this conclusively. Mr. Coe took pollen, placed it on the stigma of the same flower, and in no case did seed set.

In another experiment the pollen was taken from another flower of the same plant and placed on the stigma, with the result that no seed was formed. When, however, the pollen is brought from another plant and placed on the stigma, seed is produced. For four seasons experiments were made at Ames with the honeybee as follows:

We placed a swarm in a cage containing red clover. The cage was made of wire netting, large enough to exclude all other bees and large insects, permitting the honeybee to go out and in. Later the seed was harvested. The results are interesting as showing the importance of the honeybee in the production of clover seed.

PRECIPITATION.

Year	June	July	Aug.	Seeds per head
1911.....	2.05	.61	3.28	37.2
1915..	2.58	7.13	3.37	18.79



THE EDITOR ADDRESSING THE EASTERN NEW YORK BEEKEEPERS AT THE APIARY OF W. D. WRIGHT

A check cage of smaller size and near the bee-cage, but without bees, produced almost no seed. A few seeds were found in some of the clover heads, but we thought the seed in these heads might have been caused by some small creeping insect conveying the pollen from another plant.

Fields of red clover to which honeybees, bumblebees and other insects had access had an abundance of seed.

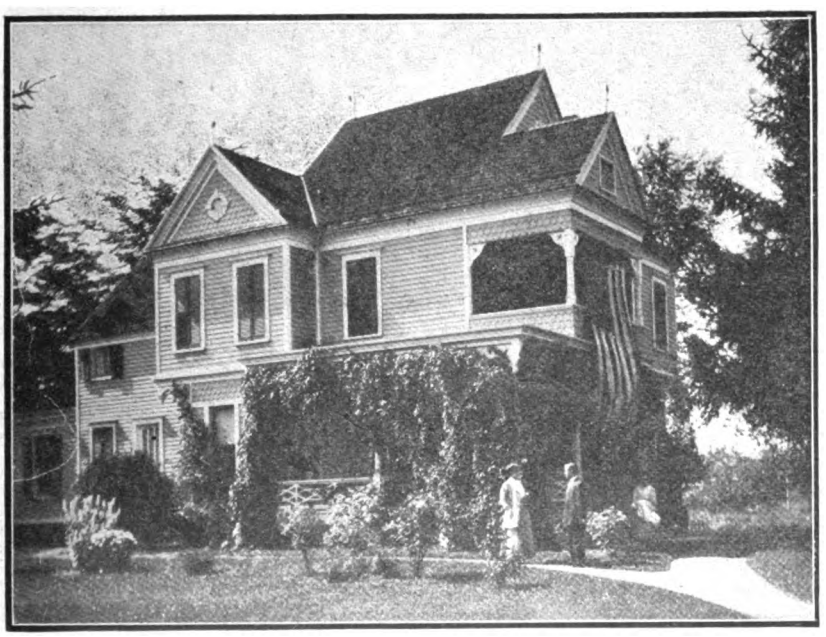
These experiments, it seems to me, should convince the skeptic that bees are important in the pollination of the red clover.

The strawberry is another plant where insects are necessary to produce good fruit. In some varieties, the staminate and pistillate flowers are borne on different plants. I think it was Prof. Waugh who conducted an experiment to determine whether the wind could carry the pollen. He exposed gelatin plates which should contain the pollen grains if carried by the wind. In not a single case did he find the pollen grains of the strawberry. The regular pollinators of the strawberry are honeybees and other small bees.

The pollination of the grape is brought about by bees, the wild grape of Iowa woods is dicœcious. Many of the cultivated grapes are sterile when pollinated with their own pollen. Prof. Beach, who conducted some extensive experiments says: "Such kinds, when they are self-pollinated only, bear no fruit or produce more or less imperfectly filled clusters." "An examination of the results which are summarized in Table III shows that Amina gave scarcely any fruit when fertilized with the imperfectly self-fertile sorts, Brighton and Wyoming, but fruited freely when fertilized with the self-fertile sorts, Niagara, Worden and Catawba. Barry gave no fruit when pollinated with either Black Eagle or Hercules, but mixed vineyards were well filled with fruit." "In previous experiments varieties of grapes which are self-sterile or nearly so have shown about as little ability to fertilize other self-sterile sorts as they have for fertilizing themselves. In the tests here reported they have usually likewise failed to fertilize self-fertile varieties. Indications are seen, however, that the pollen in some instances is not altogether important, but that its own pistils are less congenial than those of some other varieties. Further investigation is needed to learn whether the self-fertility arises because the pollen is deficient in amount, or is not well developed, or is uncongenial to its own variety."

Every gardener knows that bees are important in pollinating the cucumber. It is a common practice to have bees in the cucumber house. Very few cucumbers would set without bees.

The tomato is sometimes self-pollinated, but bees are certainly an important factor in producing good fruit.



RESIDENCE OF W. D. WRIGHT, OF ALTAMONT, N. Y.

The results of Prof. Fink and others indicate this beyond a doubt, but in one of the experiments reported the first tomato produced by close fertilization contained 48 seeds, the average number of seeds for the variety being more than 200; the fruits were below the average in size. Other observations recorded by this writer indicate that the size of the fruit is slightly increased and that the crossed fruits have a greater tendency to be irregular than those not crossed.

The various species of plums are also pollinated by insects and the bee is important. When insects are excluded fruit will not set. Prof. Waugh found that out of 153 blossoms, covered, of the Arkansas Lombard, no fruit set; that out of 457 blossoms, covered, of the wild goose (*Prunus Americana*), no fruit set; and that out of 90 blossoms, covered, of the Japanese plum (*Maru*), no fruit set. It has long been recognized that bees are important in the pollination of the apple and pear. Experiments made by Waite show the Baldwin apples produce better fruit when cross-fertilized. Waugh obtained interesting results in some experiments conducted in Vermont, only three apples having set out of 2586 blossoms covered, or little more than one-tenth of one percent. Of these the Baldwin, Esopus, Fameuse set some fruit. These varieties are generally considered more or less self-fertile.

We may conclude that bees are essential for the production of a fruit-and-seed crop of some agricultural plants. Every horticulturist should keep a few colonies of bees to insure a crop of fruit.

Ames, Iowa.

Are Beekeepers Immune to Zymotic Diseases?

BY W. J. SHEPPARD.

THE above is the subject of a leading article in a recent issue of the British Bee Journal, to which attention had been previously drawn by a correspondent. It is stated that the question is considered of such far reaching importance that the Royal Faculty of Medicine have asked for enquiries to be made respecting it. The editor will therefore be glad to hear from any person in a position to throw any light on the matter.

The theory is that people who keep bees and have become immune to sting poison, which is one of the strongest antiseptics known, consisting of formic acid with slight traces of malic and other acids, become also immune from cancer, consumption, neuritis, or any form of zymotic disease. The inference is that the sting poison acts as a protection against noxious germs by purifying the blood, and has given rise to the suggestion that zymotic diseases can be prevented or warded off by injections of a similar nature, if it can be satisfactorily proven that beekeepers as a whole, who have become immune to the poison, are free from these diseases. Of course, it does not apply to beekeepers who habitually protect themselves against stings and only get stung occasionally, but to those on whom the poison has absolutely no effect by reason of their having been stung so frequently that they have become immune.

The theory is supported by the statement that French doctors advise their consumptives to keep bees. If there is anything in the theory a good many claim that the remedy is worse than the disease. This is not so, however, and it is astonishing how soon one can become so accustomed to being stung that very little notice is taken of it. Having reached this stage there is absolutely no swelling or inconvenience from the after effects.

If after a sting is received it is rubbed out quickly with the finger nail before the poison bag has time to pulsate and pump much of the virus into the wound very little pain will be experienced, and the homeopathic doses thus received will in course of time cause entire immunity, with a minimum of suffering.

Nelson, B. C.

No. 24.—The Honey-Producing Plants

BY FRANK C. PELLETT.

Photographs with this number by J. M. Buchanan Franklin, Tenn.

IN this issue we come again to the South. The two trees described herewith are little known except in the southeastern States.

YELLOW WOOD.

The yellow wood, *Cladrastis lutea* (same as *Virgilia lutea*), is a tree confined to a limited range. It is found principally in Kentucky, Tennessee and North Carolina. While it may be found to some extent in the States adjoining the three mentioned, it is rare except in very limited areas. It is recorded as occurring on shaded bluffs in the Tennessee valley in Alabama, and may be looked for in similar situations in Mississippi, Georgia or South Carolina. The flowers are white as can be seen

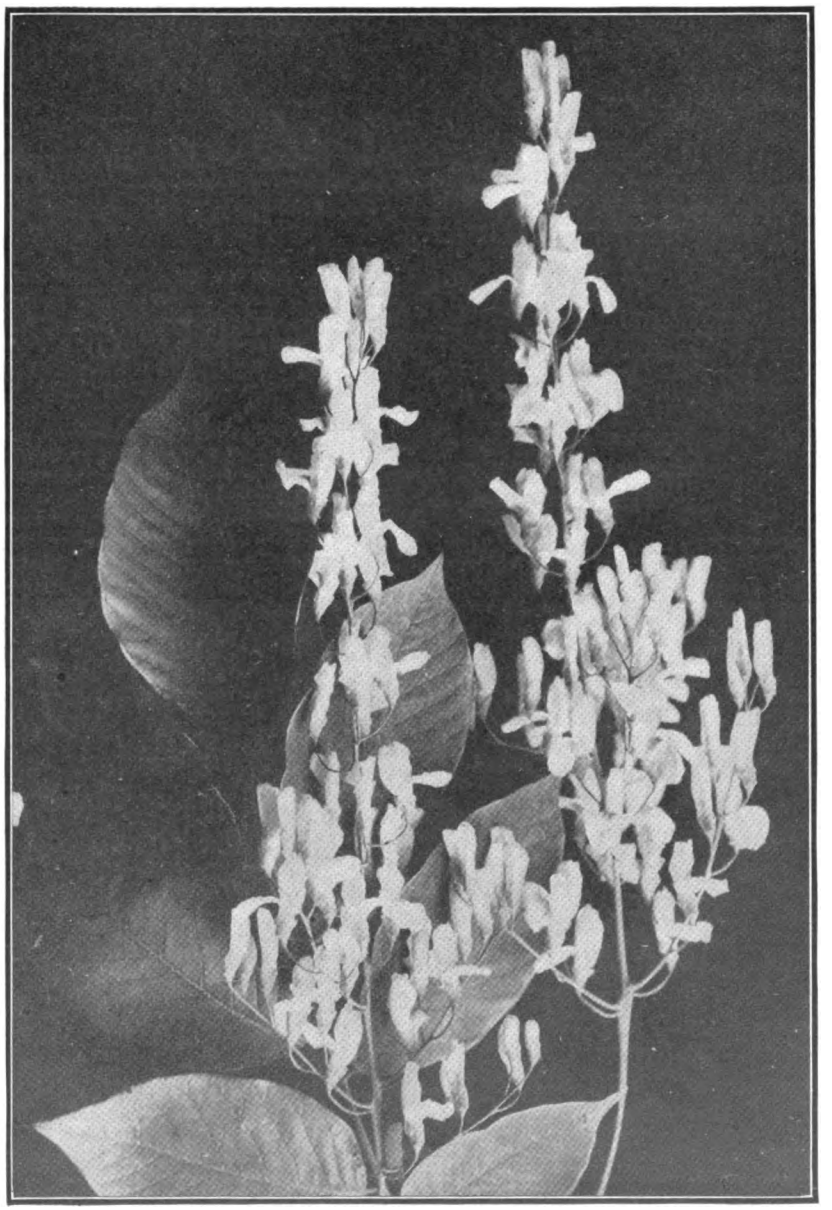


FIG. 96.—BLOSSOMS OF THE YELLOW WOOD

from Fig. 96, and appear in April and May. The panicles are sometimes a foot long. According to the notes furnished by Mr. Buchanan the honey has a strong, distinctive flavor and is light amber in color.

The wood is heavy and hard and yields a yellow dye. It is known also as Kentucky yellow wood and gopher wood.

TULIP TREE OR YELLOW POPLAR.

The tulip tree, *Liriodendron tulipifera*, also known as yellow poplar, is a very large tree often growing to a height of from 100 to 140 feet and a diameter of six to nine feet. It is found from southern New England west to southern Michigan and south to the Gulf States, east of the Mississippi. It is also found to a limited extent in southeastern Missouri and eastern Arkansas. It blooms in April and May and produces a light amber honey of good flavor.

According to Buchanan the honey yield from this source is heavy and the tree is an important addition to the nectar-secreting flora of Tennessee and nearby States. The showy flowers are shown at Fig. 97.

Atlantic, Iowa.

Copyright: 1917, by Frank C. Pellett.

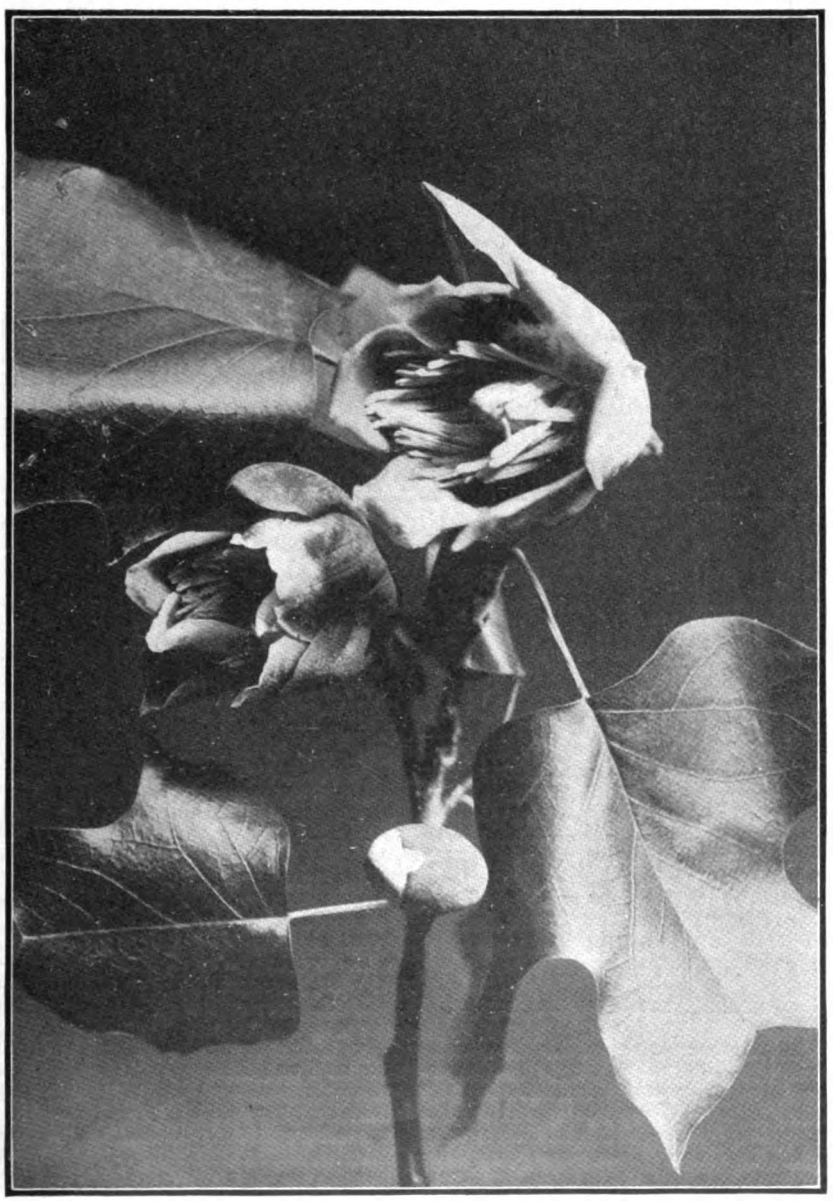


FIG. 97.—BLOSSOMS OF THE TULIP TREE

Selling Honey by Automobile in Montana

BY GEORGE W. YORK.

THERE have been many ways of disposing of the honey produced by beekeepers, but perhaps not many have, as yet, used the automobile to the extent that Mr. and Mrs. Arthur Sires have done the past year or two.

They found that as Washington was a good bee-country, and beekeepers increased in numbers, it brought more honey on the market, for which a place must be found. As the smaller producers did not launch out, it was left for the larger ones, like the Sires brothers, to take hold and find a more extensive market. So they figured.

They found it almost impossible to get grocers to handle honey to any advantage by pushing the sales along, and for several reasons. One was that they were not interested; another, they were not capable of explaining the many uses of honey, as they had not used it themselves. Some think it is to be used only on the table, and call it a luxury. But not so, for honey can be used in many ways. Therefore, as the Sires brothers had the honey, they decided to find a market for it. But as they could not reach the main honey-eaters (the farmers) by railroad, they bought an automobile, and had it fixed up in proper shape for selling honey, as shown in the illustration herewith.

It took some fine figuring, as they wanted to carry their "hotel" with them, for many times they found it hard to get a place to stop over night, although the farmers, as a rule, are the most free-hearted and generous people one can meet.

After getting things all arranged, Arthur Sires and his hustling helpmeet started out. October 26, 1915, they left their home in Wapato, Wash., and after traveling over 3600 miles they landed at Ryegate, Mont., where they made a short visit with a sister of Mr. Sires, a Mrs. Gregg. This was July 14, 1916. During that time they disposed of over 47,800 pounds of honey, mostly at retail.

They followed the railroad mainly, so as to take in each town. They would usually drive up to the post-office and meet many who were coming in for their mail. Some of them would buy honey, while others would stand around and ask questions, which were gladly answered, as far as Mr. and Mrs. Sires were able to do.

When they found they had been "on exhibition" long enough, they would make a house-to-house canvass, where they found many who were glad to listen to the explanations of the real value of honey as a food, and the many ways in which it could be used, such as making cakes, cookies, gems, putting up fruit, preserves and jellies. Mrs. Sires being along, she would speak from personal experience, which helped greatly.

They also had 1000 recipe books explaining how extracting is done, and the numerous ways in which honey is used in cooking and otherwise. They found so many who were ignorant of the real value of honey, that there was need to explain, and also leave literature for them to read.

Mr. Sires now has an order in for 5000 recipe books, which they expect to hand out to those who are interested. They may never hear again from some of those people they saw, and to whom they sold honey, but Mr. and Mrs. Sires feel that the seed has been sown on good ground, and some one will reap the reward some day.

Another thing they did in the way of advertising that is well worth mentioning, was the putting up of small printed wooden sign-boards on fences along the way, telling where honey could be bought of the Sires brothers. Mr. Sires said it was surprising how many orders they got through those sign-boards.

Mr. and Mrs. Sires are now located at Great Falls, Mont., with a branch house. They find Montana a good

field in which to sell honey, although Montana honey is also fine. But there is so little of it, as the summers are so short; therefore, the demand cannot be supplied with local honey, which thus leaves room for others to come in and take advantage of the shortage.

If you want to have a good outing, and also see the country, just extract your honey in the fall, get an automobile, and then start out. Mr. and Mrs. Sires surely have tested out their plan of disposing of the honey crop, and it certainly works well. No doubt others will "go and do likewise."

Mr. Sires passed through Sandpoint, Idaho, twice during the recent few months, and it was my good fortune to meet him and have several interesting interviews with him. He uses paper packages, shipping the honey in 60-pound tin cans to where he wants to retail it, and then fills the smaller packages with it there.

While there is a great deal to the producing end of honey, unless it is well sold the results are not very encouraging. It is seldom, however, that a good producer of honey is also a good honey salesman, but I believe that with the methods used by Mr. Sires almost any beekeeper could easily dispose of his honey crop, regardless of its size. At any rate, the plan is well worth a sincere trial.

Sandpoint, Idaho.

About Bee Demonstrations

BY FRANK C. PELLETT.

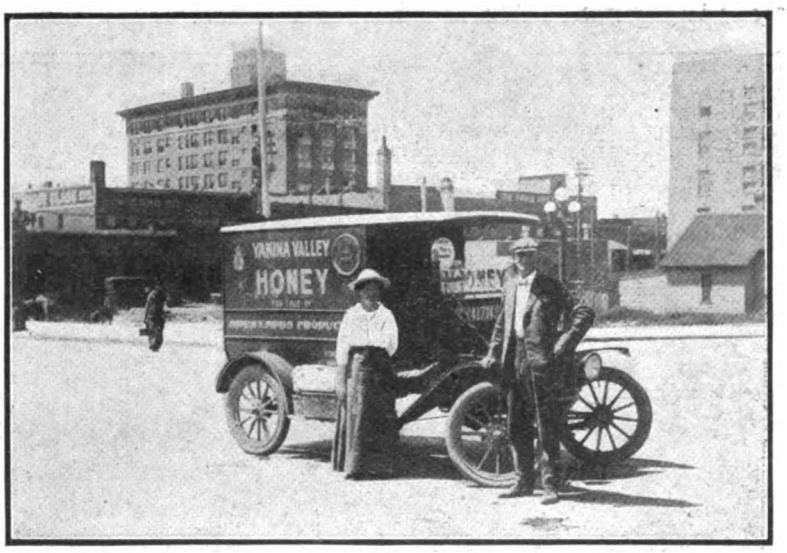
AFTER giving a live bee demonstration in conjunction with a public lecture for several years, I have decided that it is of very doubtful value and have discontinued it. There is nothing which will attract more attention in an average locality than such a demonstration, and if it were possible to control the nature of the publicity that resulted, a properly conducted demonstration might be valuable. I have always taken pains to explain that there is no mystery connected with the performance, and that nothing which might be done would be strange to well informed beekeepers. After explaining in detail the manipulation of the hive as practiced by beekeepers generally and the method of controlling the bees, I have often been confronted by glaring headlines in the newspapers something like this, "SAMSON IN THE LION'S DEN HAD A SNAP COMPARED TO THIS." The reporters never overlooked such an opportunity for a sensational story and the kind of publicity that usually results often does more harm than good, both to the operator and to the industry.

Personally, I have never undertaken such stunts as some do. I regard it as a serious mistake to don a bathing suit for such a performance. I formerly removed my coat, but of late have decided that it is better to make no special display of preparation. As far as I am willing to go in the way of stunts is to fill a hat with bees and put it on my head. Of course, the bees are handled freely with the bare hands, which is amply sufficient to make the average crowd gasp.

In my opinion, all that is desirable in such a demonstration is to show the usual manipulations of the hive. If the performance becomes sensational rather than educational, it is unworthy of any self respecting beekeeper. Because it has seemed impossible to avoid the element of sensation I have chosen to abandon the practice, although offered a very attractive opening for giving it on Chautauqua platforms next season.

There are some very good reasons why beekeepers should use the live bee demonstration. If one is a good speaker it gives a splendid opening to inform the public concerning the production of honey, its proper care and importance as a food. The results are particularly striking after it has been given to an audience of children. If properly veiled suggestions are thrown out, a considerable portion of them will go home and induce their mothers to order honey at once.

Many wrong impressions concerning bees, which can be corrected in connection with such a public appearance, can be presented to so many people in no other way. Demonstrations at fairs



MR. AND MRS. ARTHUR SIRES ON THEIR 3600 MILE TOUR IN 1915 SELLING HONEY

are of doubtful value at any time. The crowd is constantly moving and is there only for what is to be seen. Unless one can talk to the same people for several minutes there is little opportunity to give an intelligent presentation of the subject. Much depends upon the speaker, his skill in presenting his subject and the attitude which he chooses to assume. Too many men cannot avoid the temptation to appear in a sensational light, and to seem to exercise some mysterious influence over the bees. To place oneself on the level of the ordinary street fakir is to cheapen the entertainment and leave a wrong impression in the minds of the audience.

EQUIPMENT FOR DEMONSTRATIONS.

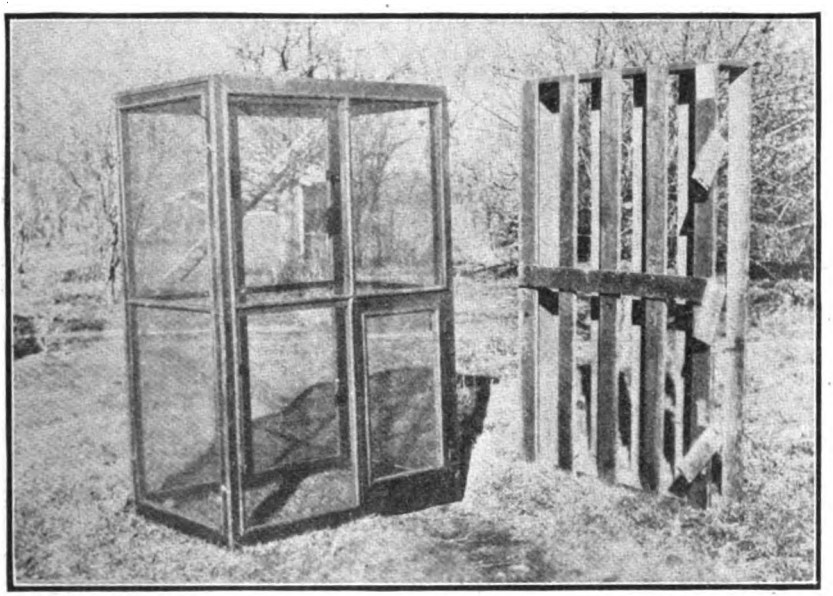
The tendency with me has been constantly to lighten the equipment carried from place to place. During the years of my early experience I used a full colony of bees and a large wire cage. The hive was covered with wire screen to keep the bees from smothering, and shipped from place to place by express. The cage was made in sections so that it could be taken apart and crated for shipment. I soon found that I was carrying about more bees and more weight than was necessary. A small hive which would contain four frames and allow some extra space was made for the purpose. Four dry extracting combs were placed in this small hive and as many bees as seemed desirable were shaken onto the frames. This hive was fitted with a canvas cover and handles so that it could be carried like a suit case.

Enough feed to keep the bees during the trip was given either in the form of honey or of sugar syrup. On one occasion, before dry combs were substituted for combs from the hive, I lost the bees which I was taking with me for a demonstration. It was a very hot day and the coach in which I was riding was very close. The bees crowded against the wire cloth above the frames in a dense mass and remained there until the combs had melted down, and most of the bees were so mussed up that little could be done with the outfit.

On arriving at my destination I found myself in a quandary. There seemed to be no beekeeper worthy of the name within reach. I was advertised to give a live bee demonstration the following afternoon, and no bees were in sight with which to do it. Since it was late at the time the town was reached there seemed nothing to do but wait until morning and go in search of bees. The most diligent search failed to locate anything but a colony of black bees in a huge box about as big as a trunk. The frames were missing and combs were built in various windings, common to box-hive bees. Since there was nothing else available it was the big box or nothing, so I negotiated with the owner for the loan of his bees for a rental of one dollar for the day. My unfortunate hive was carefully cleaned and the combs pieced back into the frames as well as was possible and tied in place. The big box was then moved a rod or two away and the little hive placed in its former position. The bees in the box were then smoked tremendously until they came pouring out of the hive in a perfect cloud. After

working for an hour I finally got a quart or two of the bees into my little hive and gave the demonstration without mishap.

One traveling with a live bee demonstration will find more kinds of experience than he ever dreamed possible. The janitor will often decide that the crate containing the cage is full of some new fangled window screens and proceed to nail them to the side of the building or raise some kind of rumpus because he was not consulted before an order for screens was placed. On one occasion an express driver, who was sent to transfer the outfit to another building where the demonstration was to be repeated before another audience, took it to another railroad and shipped it by freight. My address was painted on the outside of the crate to avoid its going astray. It so happened that they were loading a car of freight at the time the driver reached the depot, and



CAGE FOR BEE DEMONSTRATIONS AND CRATE IN WHICH IT IS SHIPPED FROM PLACE TO PLACE

within a few minutes it was on its way. The particular railroad to which it was delivered does not pass anywhere near my home and I did not see the outfit again for weeks.

The cage method was finally abandoned when the address was to be given before an audience in a Chautauqua tent or auditorium. At a fair some kind of cage is necessary as the crowd is moving all the time and in every direction. The Chautauqua audience, however, is at a sufficient distance from the speaker, so that there is little annoyance from flying bees if properly handled. It is sometimes difficult to gather all the bees back into the hive and the speakers who follow are often very timid about standing among flying bees.

At the last, my equipment consisted only of the little hive with two dry extracting combs and two empty frames to allow more clustering space and better ventilation. In addition, a small smoker was carried to show the audience how bees are controlled by the use of smoke. In order to insure that the bees would be peaceable when the hive was opened, they were fed liberally on honey an hour or two before the lecture. A small stream of honey was spread over the wire-cloth on top of the hive to give as many bees as possible access to it. Within a few minutes it would all be taken up and the bees would be very quiet.

To get young bees I usually went to a hive, in the middle of the day, when the old force would be in the field, or moved the hive several feet from its normal position for several hours. It is the old bees which are most likely to make trouble, and in this way it is easy to avoid getting them into the traveling hive.

Persons who aspire to give public demonstrations frequently ask what price they should receive for such work. That question can be answered only in a general way. The beekeeper who wishes to advertise his product at his country fair may well afford to give the demonstration without compensation, for the advertising it brings him. But when a man must carry his outfit for a long distance and take the time from his work, it is worth something. What one can get depends upon his ability to entertain a crowd. At the start I gave demonstrations for $25 each. At the last I was getting $60 for each demonstration, and was offered a much better price to continue through another Chautauqua season.

In general a man can make more money in his own bee-yard at that season of the year than he can by traveling from place to place giving public exhibitions. From my own experience, I can assure the reader that it is also much more agreeable, and I am now increasing my apiaries with the expectation that the added sales of honey will more than make up the difference in income from giving up the public address.

My Neighbor's Garden

BY CHARLES DUFF STUART.

THE advent on our premises of honey-bees diverted all thought from the proposed petition. Many of our neighbors were in favor of settling once for all a vexatious question by requesting the authorities to condemn as a nuisance and remove from the public highway a hedge of eucalyptus trees, and an equal number were for "peace at any price," in all things. The proponents needed one more "yea," and my seat on the fence was not rendered more comfortable by the knowledge that I held the balance of power.

Fortunately we were completely engrossed in our new possessions. We hovered over them as a mother her first-born, always deeply concerned over the welfare of her Majesty, the Queen, and when the bees flew away and failed to come back immediately, we started in a mad pursuit that all too frequently came to an abrupt end just outside the imposing iron gates of my neighbor's garden, which were locked against human intruders. We wondered if the weather were too warm for "our little friends," and noting that the hives were stationed in the shade of the much debated eucalyptus trees, we fell to wondering if they were warm enough, which again brought us back to the question of that petition.

It was 20 years ago that my neighbor across the way planted the hedge all round his 10-acre lot. That was long before we became neighbors, and it was also many years before the trees had attained sufficient growth seriously to compromise friendly relations with other old residents near by. But later arrivals were not so fortunate. The trees towering more than 70 feet, not only separated even more completely from its surroundings the already secluded 10 acres, but also divided the community against itself. Those living on one side claimed "too much shade," and on the other, "obstruction to view." The fruit orchard of a third had ceased to bear, owing to the sustenance of the soil having been extracted by the long roots of the trees that spread in every direction while a fourth complainant was completely mollified when the lower and more dangerous of the overhanging branches were sawed off and presented to him for firewood.

As for us, we admired the splendid avenue bordered by the tall straight sentinels, as did all newcomers; but after paying a workman a third check to clear away the long leaves that clog the gutters of our cabin roof during heavy storms, and numerous futile efforts to free the yard of fallen limbs, I grew thoughtful and wondered if the rumors I had heard concerning the undesirability of that hedge were not true. I remonstrated with my neighbor's gardener who helped me rake and burn the trash. Even my neighbor himself came out and helped until finally he declared he wished he had never planted those trees; it cost so much to clean up the rubbish.

He was so emphatic that I wondered if after all I would not be doing him a real kindness to support the aforesaid petition. I hinted that the cause of the trouble might be removed, but he refused to consider it. "What, remove trees that had taken 20 years to grow! Besides, they were too tall to cut. There was no room for them to fall, and no one would take such a job anyway." I could have suggested our anæmic neighbor who would have hazarded most any undertaking for firewood; but I held my peace also to

the top rail of the fence. I had more personal worries. Our bees that had shown such activity earlier in the summer had almost ceased to fly, and were cross to the point of savagery; and whereas I had formerly been alarmed lest they would fail to come back, I had now become alarmed because they would not fly forth.

This state of affairs had become almost intolerable when one bright morning about Nov. 15, we heard a subdued roaring which grew louder as we crossed the road. It came from above. We looked up and discovered our bees busy in the tops of the eucalyptus trees, in which hung great clusters of white bloom. By using a huge pair of pruning shears that operate with rope and pulley, the head gardener brought down a splendid specimen. We carried our treasure to the house. It was as large as a small Christmas tree. Soon the books and papers on the table beneath its spreading branches were daubed with a substance similar to molasses, which we discovered came from the cups of the flowers. The disc of the nectar cup in the eucalypts is fully as large as a 10-cent piece, and in the room at a temperature of 70 degrees, yields two or three heavy drops of fluid when held in any position out of the horizontal.

We removed the spray to the porch where it was eagerly pounced upon by the bees. Through a magnifying glass, the bee appeared to dip its tongue deep and suck up the nectar rather than lap up the liquid where the flow is more slow. Close observation showed a pumping motion or convulsive movement of the abdomen, as though the bee might be sucking the nectar through its tongue or, rather, through the round tube on the tongue.

The blossoms continued throughout the winter and disappeared entirely only about the first of June. During that time there was no month when the hives did not contain some brood. The bees were on the wing, almost rain or shine, since they actually dodged out between showers whenever the sun was warm enough to start the nectar to flowing. I did no winter feeding last year and the colonies came into spring with the hives full of stores.

One day my neighbor unlocked the iron gates and crossed the road to wish me a Happy New Year. As he turned away he noticed the row of white hives. "What do your bees get to eat in the winter?" he asked evidently associating flowers and bees only with springtime.

"Just now," I replied, "they are living off your eucalyptus hedge."

He eyed me cannily for a moment, then as a satisfied grin overspread his features, "Well, I'm glad those trees have been found good for something, at last."

Los Gatos, Calif.

A ROW OF EUCALYPTUS, THE "TALL STRAIGHT SENTINELS"
(Photograph by Alice Coldwell)

A SPLENDID SPECIMEN OF THE EUCALYTUS BLOSSOM
(Photograph by Alice Coldwell)

A Farmer Beekeeper's Success

BY C. E. MILLER.

I AM living on a farm ten miles north of Scranton, Pa., where, in 1812, my grandfather settled; here my father was born and died, and here I also first saw the light of day. My residence, which has all modern conveniences, is the third to be built on the same cellar, and is only one of several buildings erected by the financial aid of the bees.

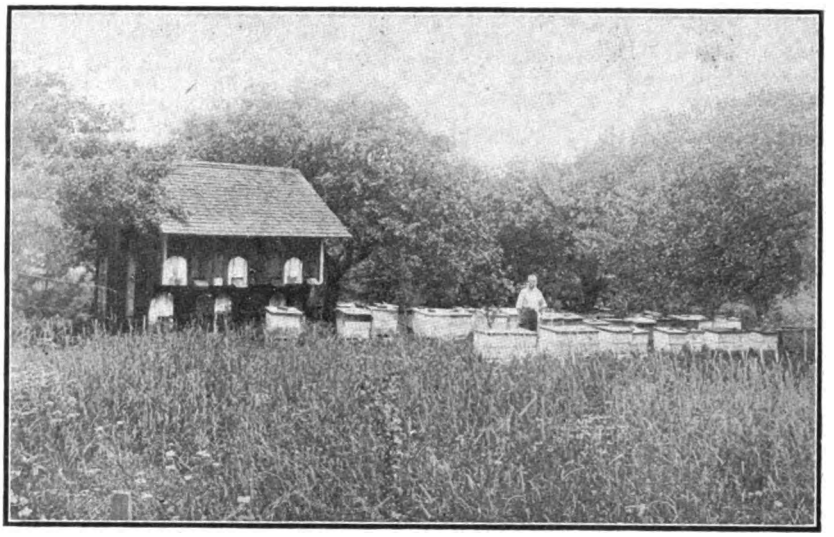
In the spring of 1870 I attended a public sale where I purchased a large hive of black bees at $8.25, and well do I remember tying it with a rope for its removal, as it was split from top to bottom. This colony was the nucleus of my present apiary.

When these bees swarmed I put them in a movable-frame hive, transferring also the parent colony. It was in 1875 that I bought my first Italian bees of one George Cramer, of Thompkinsville, Pa., and to him credit is due for bringing to my attention the American

Bee Journal, for which I subscribed, continuing a constant reader for 25 years, and then failed to renew. I missed its regular visits more than I anticipated, so before that year ended I sent my remittance, which I have not failed to do since, making 41 years I have taken it. All these years I have carried on farming in connection with beekeeping.

For thirty years I have made my own foundation, and that of neighboring bee-keepers, on a Given press; also most of my hives, using a Barnes' foot power saw, and consider them as accurately constructed as those turned out by factories.

My present apiary numbers 115 colonies. We had a bountiful fall honey flow from buckwheat and goldenrod. European foulbrood first made its appearance in my yard about five years ago, and I have put up a strenuous fight against it, and in this I found the American Bee Journal an invaluable aid, proving once more that we are never too old to learn.



APIARY OF C. E. MILLER AT CLARK'S SUMMIT PA.

HOME OF C. E. MILLER, WHO HAS BEEN A SUBSCRIBER TO THE AMERICAN BEE JOURNAL FOR MANY YEARS

I find in my home market a ready sale for my entire crop, and this market demands both comb and extracted honey, for which I am always able to obtain a fair price. I formerly kept a part of the bees in a house, the use of which I have discontinued, as I lost a large percentage of queens at the mating season.

Clark's Summit, Pa.

BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

How to Hatch Bee-Eggs in an Incubator?

In American Bee Journal for December, 1916, page 424, "Montana" asks the question, "Can you give me some information on how to hatch bee-eggs in an incubator?" and Dr. Miller replies, "No; I never heard of bees' eggs being hatched in an incubator, and very much doubt if it can be done."

A California sister, Virginia P. Hewitt, referring to this, sends an ad clipped from the Diamond Match Co.'s catalog, the ad offering queens for sale, and the statement is made: "All our queens are hatched in Petaluma electric incubators." She adds: "I read a few days ago of an Oregon woman who had hatched some queens in an incubator just as an experiment."

It is perhaps unfortunate that in beekeeping parlance the word "hatch" is used with two different meanings. We say "The young larva hatches out of the egg three days after the laying of the egg," and we also say: "The young worker-bee hatches out of its cell three weeks after the laying of the egg. According to that the same being hatches twice, and some have advocated that the word "hatch" should apply to the first act only, and that in the second case we should say, "The young worker-bee emerges from its cell three weeks after the laying of the egg. It might, however, be a little awkward in some cases to be denied the use of the word "hatch" with both meanings. It would hardly do to say, "All our queens are *emerged* in incubators."

However all this may be, it is plain that in the ad the hatching in the incubator refers to the emergence of the queen from her cell. There is nothing new in that. A good many years ago there was much said in bee literature about hatching queens by artificial heat, and it was then practiced to a considerable extent. When young queens are hatched in an incubator, the cells are put in the incubator after they are sealed; probably the riper the better, for it has not been claimed that better queens were reared in an incubator, only that it was more convenient for the beekeeper; just as it is for his convenience that queen nurseries of the present day are used.

But the hatching about which "Montana" inquired was the hatching of *eggs*, which is quite another affair. If any one thinks Dr. Miller is not justified in doubting the possibility of hatching bee-eggs in an incubator, it ought not to be a hard thing to test the matter. Just put in the eggs, and then watch for the appearance of the tiny larvæ. Even if the young grub should appear, it would hardly survive very long without the presence of nurse-bees to feed it. On the other hand, when a sealed cell is put in a nursery, and the young queen emerges from it, she will get along quite well for a number of days with no nurse-bees present, provided a lump of queen-candy has been put in the compartment with her.

Wintering

I am very doubtful as to how to winter my bees. We have a cement base-

ment in which we have a heating plant for the house, and we have placed the hives in the basement and have left the entrances open. The bees fly out, and, of course, get cold and immediately fall to the floor. Can you advise me how to winter them under such conditions. [MRS.] A. J. BERG.

Thief River Falls, Minn.

You say you have placed your bees in the cellar. It was a mistake to put bees in cellar in October. No wonder they are not quiet in their hives. The first thing to be done is to hustle them out of the cellar and onto the summer stands. Then put them into the cellar again the next day after the last flight they take before winter sets in. It will take some guessing to know just when that will be, and possibly, in your locality in Minnesota, it may be safe to assume that when bees fly any day after the middle of November that that is their last flight, and that they should be cellared the next day.

With a heating plant in the cellar, like enough the problem will be to keep the cellar cool enough without letting too much light in; for the cellar must be kept dark. But if it is with you as it is here, the heat in the cellar will be an advantage, for it will allow you to have abundance of pure air without cooling the cellar too much. Possibly it is so that you can let the air come into the room where the bees are, in some indirect way, so as to leave the bees in the dark. If not, then you can cool the bees off at night and keep all closed daytime. You will likely find a temperature of about 50 degrees best, but at any rate try to keep it at that point where the bees are quietest. Keep the bees content in their hives by keeping the cellar dark, at the right temperature, and with plenty of pure air.

Queen-Rearing

Since having the pleasure of meeting the Editor at Hondo, Medina Co., Tex., last spring, I had a visitor to my apiary here in Castroville, in the person of Mr. Henry Brenner, of Seguin. He came in response to an inquiry of mine for more light on the subject of queen rearing. His article on that subject, which I read last spring in the American Bee Journal, seemed to me to be filled with very valuable suggestions, and if I don't succeed in rearing some good queens after his very kind instructions, it certainly will not be Mr. Brenner's fault.

My son, age 14, has been a beekeeper for five years with seven colonies of his own, which he has paid for out of the proceeds from his honey. He is also a subscriber of the American Bee Journal and takes great interest in reading it. Mr. Brenner praised the condition of his hives and he is now more enthusiastic than ever.

I am writing this to let you know that I feel very thankful to the American Bee Journal for being the means of my becoming acquainted with Mr. Brenner and his method of queen rearing. [MRS.] J. T. FITZSIMON.

Castroville, Tex.

It is good to know that you are interested in rearing queens, for that almost certainly means improvement of stock, since you will no doubt keep track of the yield of each colony and breed from the best.

In the picture you are seen holding a frame flat, and you may be told that a frame should never be held in that way, lest the comb break out, and that a certain routine of motions should be made in turning a frame over, so as to avoid holding a frame flat at any time. That was all right 50 years or so ago, but in these days of wiring and foundation splints there is no need to have combs so insecure that they will fall out when held flat. Generally one can see into the cells better when holding the frame flat, and it saves time in handling. At any rate, in this locality frames are held just as you hold them.

MRS. J. T. FITZSIMON AND HER SON IN THEIR SMALL APIARY AT CASTROVILLE, TEX.

MR. BRENNER, OF TEXAS, POINTING OUT THE QUEEN

MISCELLANEOUS NEWS ITEMS

Honey Crop of 1916.—The monthly crop report of the Department of Agriculture for November, 1916, gives a comparison of the average per-colony yield in the years 1915–1916. The total average for 1915, in the entire United States is 42.3 pounds per colony, and in 1916 52.8, a difference of 10½ pounds, with an increased spring-count number of colonies of 2.8 percent. The crop of section comb honey is 40.3 percent, that of extracted 39.5 percent, and that of bulk comb honey 20.2 percent.

Florida reports the largest crop per colony in 1916, 85 pounds, while Missouri shows the largest increase over the 1915 crop, 75 pounds in 1916 to 35 in 1915. The poorest showing is made by North Carolina, which shows only 23 pounds per colony, a decrease from 1915 of 19 pounds.

The total increase of production of honey is 23.3 percent, and as prices are about as high as last year, the dollar and cent result will prove very satisfactory.

Of the total crop, 67.7 percent is sold locally, and 32.3 percent is shipped to outside markets, an increase of local consumption of about 7 percent, over the sales of 1915.

Texas News Items.—Mr. Henry Brenner, of Seguin, one of the best known Texas beekeepers sailed for Porto Rico Nov. 18, from New York on the steamer Carolina to do some special investiga-

tion work for the A. and M. College. He is looking into beekeeping conditions in the tropics and making an investigation of marketing conditions.

State Entomologist, F. B. Paddock, and Prof. Louis H. Scholl held a meeting in San Antonio on Nov. 14 with other prominent beekeepers looking toward the request to be made on the legislature for increased appropriations to be used in the Foulbrood Eradication Work.

Director B. Youngblood, of the State Experiment stations, has signified his determination to provide for the establishment of a State experimental apiary in his forthcoming estimates. This is the result of the agitation of Mr. Louis H. Scholl in urging that the State of Texas establish a series of apiaries in the honey-producing centers so that practical experiments may be made under actual apiary conditions in the South. Most bee literature and former experiments of this kind have referred to northern conditions. In Texas, climatic and honey conditions being so different it is advisable to definitely determine what modification of accepted usage is most desirable.

If the bees had not been on high benches, Louis Werner, of Edwardsville, Ill., would have suffered again from flood conditions

Mr. T. P. Robinson, of Bartlett, as superintendent of the State Fair at Dallas, has just successfully staged one of the best and most instructive bee and honey exhibits ever held in the South. Under the efficient management of Mr. Robinson these exhibits have grown to be of increasing value to the industry every year.

Southern beekeepers will welcome the new eight-page paper, The Beekeepers' Item, published at New Braunfels, Tex., under the editorship of Mr. Louis H. Scholl. The initial number appeared Dec. 1.

The Texas Honey Producers' Association has perfected its organization and will begin operations Jan. 1. E. G. LeStourgeon has been elected as manager and Mr. A. M. Patterson, of the Adams State Bank of Devine, as treasurer. The business office will be established in San Antonio. The directors met on Nov. 25 to approve bonds in the sum of $10,000 each, furnished by the manager and treasurer. The association will be incorporated for $25,000. Subscription books are open to Jan. 1, and any one who has not subscribed for stock has the opportunity of doing so up to that date.

Mr. H. D. Murray, of Mathis, Tex., reports the meeting of the Live Oak County Association held at Three Rivers on Nov. 4, as having been very successful. Over 3000 colonies of bees were represented, and not nearly all of the beemen of the county were present. The next meeting was held in Oakville, Monday, Dec. 4.

Honey stocks in the hands of the producer are about exhausted. There has not been such a complete clean-up of the surplus stock in a number of years. These bee-men who held their honey during the period of demoralized prices in the summer have been rewarded by securing from two to three cents per pound more for their product than their neighbors. It is significant that the advance in prices offered to the producers began just as soon as the announcement was made of the successful organization of the Texas Honey Producers' Association.

In the horsemint districts bee-men are anxiously looking for rainy weather. This plant is a biennial and must have sufficient moisture when it comes in the fall to get its root system well developed. Good flows of horsemint honey are gathered in years following a wet fall and winter. It is a peculiar thing that the contrary is true of mesquite. The best mesquite honey crops are always gathered after a dry winter.

The Producers' Association formed by the beekeepers has already secured members controlling over 20,000 colonies of bees. This means that if next year is a normal honey season some two million pounds of honey will be marketed directly by the producers themselves through their own selling organization and under an association label.

The most recent estimates of the 1916 honey crop place the figures for honey sold as 5,000,000 pounds. Of this three-fifths was raised in southwest Texas, about a million pounds in the alfalfa country of the Pecos Valley and west Texas and another million in the cotton belt. And yet the surface has hardly been scratched. It has been asserted by agents of the Department of Agriculture that Texas could easily and profitably support ten times the number of apiaries that it has. Every farmer who feels the high cost of living and is tired of eating out of a paper bag could well investigate the possibility of making a start toward independence by securing a couple of hives of bees. E. G. LeStourgeon.

Those Comb Honey Rates.—As stated in our last issue, the beekeepers of the central West made a united effort a short time ago to have the rates on comb honey lowered within reason, as they now are double first-class on local shipments in the central West, and West!

The appearance of the representatives of the beekeepers before the rate commission has resulted in a reduction of the rates, although they are not yet as low as desired. It was hoped to have comb honey in the second-class when properly packed instead of first-class. The following is a quotation from the representative of the commission:

"We beg to quote below for your information an item which will appear in Supplement 5 now in the hands of the printer, and which will become effective on or about Jan. 25, 1917:

"Comb honey in section frames: In wooden boxes only, LCL, D1. In wooden boxes with or without glass fronts, two or more enclosed in wooden boxes only or in crates, see Note LCL 1. In packages named, CL Min. Wt., 30,000 lbs., 4. Note comb honey in section frames in wooden boxes with or without glass fronts, two or more enclosed in wooden boxes only or in crates, must be protected by a pad of hay, straw, excelsior or similar material not less than four inches in thickness in the bottom of box or crate and the package plainly marked on top 'Fragile—this side up.'"

It is to be noted that shipments unprotected still remain at double first-class. But surely there will be no comb honey shipped by reliable beekeepers which will be subject to this rate. It is the uninformed and careless beekeeper that makes the rise in rates necessary to cover damages to honey in shipping. It behooves us to educate every uninformed beekeeper on proper methods of shipping honey as well as on any other topic of general interest.

Bee Pep.—That inimitable secretary of the Iowa association, Hamlin B. Miller, conceived the idea, before their meeting was held, to send to all members and prospective members a little specially gottten up 4-page paper entitled, "Bee Pep." It contained news items of special interest to Iowa beekeepers, and was designed to stimulate the attendance at the annual meeting in Des Moines. It undoubtedly did; witness the crowd in attendance at the meeting.

WITNESS THAT we have already two special candidates available to

mention in the next annual issue of that "Bee Pep," and they are not Iowa beekeepers, either, Chas. and Carol Schmidt, of Marysville, Kan. In answer to one of our circular letters urging them to renew without delay, here is what they wrote:

Dear Sirs:—We received your last letter.

We understand what you intend to do about improving the paper, and believe that you will keep your promise. We would like to take the American Bee Journal very much because it is interesting.

We are only ten and twelve, and are very busy with our school work. For this reason we will subscribe next spring. We followed the Stephens method, and we got one thousand pounds off of six hives and no swarms. We used the double hive method explained by Mr. Geo. W. Stephens, page 163 in the May issue of the American Bee Journal. There is but one objection to the plan that we have, and that is it is hard to find the queen, because of the crowds of worker-bees. We have thought of a way to avoid that trouble. This is the plan:

Prepare an empty hive, and have it handy at the side of the hive in which you wish to operate. First take a frame out of the full hive and look over it. In case you do not find the queen put the frame in the empty hive. Then take out the next one; look at it. If you do not find the queen in that put it in the empty hive beside the first. Do likewise with all the rest, and if you do not find the queen in any of them look around the inside of the hive you took the frames from.

We hope you will find this plan to an advantage. Yours truly,

CHAS. AND CAROL SCHMIDT.

Marysville, Kan.

The secretary of the Kansas association will please note that here are two boys who will want to be joining some of these times. Perhaps he needn't mind; they'll undoubtedly hunt him up when the time arrives.

CUPID AND THE BEE

Cupid once upon a bed
Of roses laid his weary head;
Luckless urchin not to see
Within the leaves a slumbering bee!
The bee awaked—with anger wild
The bee awaked and stung the child.
Loud and piteous are his cries;
To Venus quick he runs, he flies!
"Oh mother!—I am wounded through—
I die with pain—in sooth I do!
Stung by some little angry thing,
Some serpent on a tiny wing—
A bee it was—for once, I know
I heard a rustic call it so."
Thus he spoke, and she the while
Heard him with a soothing smile;
Then said, "My infant, if so much
Thou feel the little wild bee's touch,
How must the heart, oh, Cupid! be,
The hapless heart that's stung by thee?"

THOMAS MOORE, "*Odes of Anacreon.*"

Departmental Changes.—The increased appropriation of $5000 for extension work in beekeeping has added three men to the government staff under Dr. Phillips.

C. E. Bartholomew, formerly at Ames, Iowa, as instructor, will be located at Memphis, Tenn., where his extension work will be conducted in cooperation with the Tennessee State Department.

Geo. H. Rea, of Pennsylvania, is doing work in the Carolinas, taking up the work where E. G. Carr, out last year for a short time only, left off.

Kennith Hawkins, formerly a queen-breeder in Illinois, will do general extension work in the South, changing locations as demands are made upon his time.

The place of Prof. Bartholomew at Ames is to be taken Jan. 1 by F. Eric Millen, State Bee Inspector of Michigan in 1916; while Mr. Millen's place, in turn, will be taken by B. F. Kindig, formerly of Indiana, and connected with bee inspection there.

Changes at the Iowa Agricultural College.—As stated elsewhere, Prof. C. E. Bartholomew has resigned his position of assistant professor of apiculture in the Iowa College of Agriculture and has entered the service of the government.

Prof. F. E. Millen, formerly of the University of Michigan, has been elected to succeed him. While the course in beekeeping at the Iowa institution is good now, there is much interest manifested in its development on the part of the beekeepers, and the college authorities promise to increase the appropriation for the work as rapidly as circumstances will permit.

Doctor Pammel announces that the first of the series of bulletins on honey plants and nectar secretion which are under way in the Botanical Department will shortly be published. He expects to have two of these bulletins ready for distribution before the close of the school year. Dr. Pammel is working along new lines and the bulletins from his department will be the first from any institution in America dealing with these special problems. The appearance of these bulletins is awaited with much interest.

New Jersey Meeting. — The annual meeting of the New Jersey Beekeepers' Association will be held in the Entomology Building, Bleeker Place, New Brunswick, N. J., on Tuesday and Wednesday, Jan. 9 and 10, 1917.

E. G. CARR, *Sec.*

Montana Beekeepers to Meet.—The Montana State Beekeepers' Association will meet this year in Bozeman in conjunction with Farmers' Week at the State College Jan. 21 to 28, 1917.

S. F. LAWRENCE, *Sec.-Treas.*

Missouri Meeting

The annual meeting of the Missouri Apicultural Society will be held this year in connection with a four-day short course in beekeeping (Jan. 2 to 6) at the State University of Columbia' Mo. Our readers are already familiar with Dr. L. Haseman, the Missouri Entomologist, who is active in promoting better beekeeping in his State.

CONVENTION PROCEEDINGS

Indiana Beekeepers Meet

The meeting of the Indiana beekeepers at Indianapolis Nov. 27 and 28 was attended by some 40 members. Two of the expected speakers, Messrs. E. R. Root, editor of Gleanings, and Prof. Francis Jager, president of the National, were absent, having been detained by other duties.

One of the most interesting addresses was delivered by the secretary, Geo. W. Williams, on the subject which has been his hobby for a number of years, "Honey Sales and Cooperative Advertising." Mr. Williams is well known for his earnest endeavors to get the value of honey as food properly recognized in the household science teaching of the public schools. In his address he compared the timidity of the honey producers regarding advertising to the timidity of a child who does not know the road to his home and is afraid of the street cars that would carry him safely to the very door of that home. The simile is very well taken. The steps that have been inaugurated in different directions to advertise honey and recommend it to the consumers as one of the best and healthiest of foods are already showing results, and our timid honey producers will sooner or later recognize the great advantage of liberal advertising.

The report of the State Inspector, Mr. Frank N. Wallace, who is also State Entomologist, was very interesting and showed that foulbrood is being eradicated by energetic action. Box-hive beekeeping is being reduced throughout the State, only 143 "gums" having been found in the inspection of 1916, while during the first year of inspection over 1000 such hives were found. The total number of diseased colonies found in Indiana in 1916 was 440 of American foulbrood and 96 of European.

Prof. Snodgrass, whose wonderful anatomical studies have been published by the Bureau of Entomology at Washington, D. C., was present and read an essay on the individuality of the bee, showing how each bee works on her own independent instinct without orders or guidance from others in a re-

public where there is no congress, no laws except natural laws and no loafers, each individual using its ability to the utmost for the common good. The bee teaches man a valuable lesson.

Mr. Geo. Demuth, of the Bureau of Entomology, working under the direction of Dr. E. F. Phillips, was present and spoke of the continuance of the experiments on wintering made at Washington for the past few years. It will be remembered that very positive facts were ascertained concerning the temperature of the hive cluster in winter. But there is much yet to learn on this subject. The relation of the size of the colony to the production of heat, of the consumption of honey to the temperature, etc., will prove of great benefit. These matters are being investigated and the results cannot fail to prove very useful in the wintering of bees in cold climates.

Essays by Miss Piel, of Columbus, Mr. Erbaugh, of Onward, Mr. Swails, of Lebanon and others, helped to increase the interest. It was a well managed meeting which deserved to be attended by hundreds of Indiana apiarists, instead of by scores. The beekeepers of Indiana need to remember that such meetings are arranged to promote their industry, and should give their association their hearty support. The same criticism might be applied to Illinois, where the meeting of a very efficient beekeepers' association is not attended usually by more than 40 or 50 members, when several hundred might profit by attendance both in pleasure and increased knowledge.

The Iowa Convention

The fifth annual convention of the Iowa State Beekeepers' Association, which was held in DesMoines Dec. 5 and 6, was the most successful in its history. It was estimated that 200 were in attendance. E. R. Root, editor of Gleanings, Dr. E. F. Phillips, of Washington, D. C., Prof. Francis Jager, of Minnesota, George W. Williams. of Indiana, and M. G. Dadant, of this office were in attendance from outside the State. The rooms furnished by the Chamber of commerce were convenient and accessible, and the interest did not lag for a minute from start to finish.

Prof. Bartholomew, the president, was unable to be present, having recently taken up work for the government in the State of Tennessee. In his absence Vice-president Bleasdale presided.

President Jager, of the National, was warmly greeted in spite of the fact that at its last meeting the Iowa association voted to withdraw from the National affiliation. Prof. Jager outlined matters which could hardly be undertaken except by a national organization, and it was apparent that the Iowa folks are behind the kind of organization that he proposes to develop.

Doctor Phillips outlined the extension work which is being undertaken in the South and the advantages that are likely to come as a result of it. At the 1915 meeting a resolution was adopted asking for such work, and Mr. Pellett was appointed as a special representative of the association to go to Washington and present the matter to congress. Dr. Phillip's plans for the extension work which has been undertaken as a result of the special appropriation seemed to meet with the entire approval of the beekeepers present. It will be remembered that the National took action similar to that of the Iowa convention, and that Mr. Root also went to Washington in the interest of the appropriation.

Mr. Root's discussion of the marketing problem brought out the fact that extracted honey in carlots is no longer to be had although the past season's crop was unusually large in the clover region. Several factors have contributed to bring about this condition. The great rise in price in other food products has helped the demand. The general publicity given to honey by the Airline advertising has also had no little effect.

Space will not permit a mention of the various papers and discussions which filled the time very fully for the two days. Fortunately the papers will be published in book form in connection with the inspector's report, and will later be available to those who apply to the secretary for membership. Secretary Miller has been pushing the membership up rapidly and the interest in the organization is increasing as a result. Provision is made to bind enough copies of the report in cloth covers to supply the members of the association.

The resolutions adopted approved the change in the office of the State inspector as recommended by Mr. Pellett, placing the work in charge of the extension department of the Agricultural College at Ames. They also conferred honorary life membership upon the retiring inspector.

It was decided to hold the next meeting at the same location in DesMoines the first week in December, and leaving the extra dates to be chosen by the secretary and president. B. T. Bleasdale was elected to the office of president; H. E. Roth, vice-president; Ham B. Miller was re-elected secretary-treasurer, and Miss Belle McConnell, D. A. Davis and B. A. Aldrich were elected directors. The matter of a hive products' show in connection with the next convention is under consideration and will probably be undertaken if the beekeepers are willing to supply a sufficient amount of honey and wax to make a creditable display. Provision was made to supply honey to the charity organizations of DesMoines for the Christmas dinners of the poor.

Arkansas Valley Beekeepers Organize

The Arkansas Valley Beekeepers' Association held its first annual meeting Dec. 2 at Mt. Hope, Kan. There were present about 25 live-wire beekeepers, coming from Pratt, Chase, Nickerson, Hutchinson, Burrton, Augusta, Colwich, Wichita, Haven, and Mt. Hope.

In the forenoon visits were made to the apiaries of E. W. Jewell and C. D. Mize. These gentlemen served a banquet at the local hotel.

Immediately after the banquet the meeting was called to order in the Town Hall. While the main purpose of the meeting was to perfect the organization, some time was taken to discuss the American foulbrood disease of bees, which is now so prevalent throughout the entire State.

Mr. O. J. Jones, of Wichita, C. D. Mize, of Mt. Hope, and J. A. Nininger, of Nickerson, were appointed a committee to confer with the several fair boards in an endeavor to have a more favorable premium list for the Apiary Department of all fairs held in the State.

The following officers were elected for 1917: President, Dr. A. G. Raffington, of Hutchinson; vice-president, J. A. Nininger, of Nickerson; secretary-treasurer, J. L. Pelham, of Hutchinson. Directors, O. J. Jones, of Wichita, and Carl F. Buck, of Augusta.

Mr. J. A. Nininger and the Reno County High School, cooperating, invited the association to a Field Meet to be held at Nickerson sometime in May.

The next annual meeting will be held sometime during the first week of next November at Wichita.

J. L. PELHAM, *Sec.*

Some Northern Meetings

One of the most interesting features of the Chicago-Northwestern meeting, was the taking of a census or an estimate of the different prices at which its members have sold their honey during the past season. Extracted honey was sold at retail prices ranging from 9 cents to 25 cents per pound. This is too wide a variation, although in some cases there would be some justification for a variation of 5 or 6 cents.

On motion of Mr. J. C. Bull, a committee was appointed to get into communication with all the members during the summer, also with other beekeepers who could be conveniently reached and investigate crop and market conditions. On getting this information, the committee would recommend a minimum price at which honey should be sold; this to be in the form of a recommendation and not dictatory. The chairman appointed John C. Bull, E. S. Miller, N. E. France, E. D. Townsend and L. C. Dadant.

This work will, of course, be very valuable to beekeepers, but previous experience shows that it is very difficult to get correct information and secure it in time to be of great value. The work, however, is along the right lines. The officers elected for the coming year were E. S. Miller president, and John C. Bull secretary-treasurer.

At the Wisconsin meeting at Madison Dr. E. F. Phillips gave a very interesting paper on "Extension Work in Beekeeping in the South." Although the South has more bees than the North, its honey production per colony is much lower. With proper guidance, we have no doubt that the honey production in the southern States can be greatly augmented, which will greatly add to its resources.

E. R. Root explained the "Establishing of a Trade Name for Honey." His pointers on the effects of general advertising and the manner in which it is to be carried out were educational.

The beekeepers of Wisconsin, under the guidance of inspector N. E. France, are doing good work in controlling foulbrood. With the help of the courses of instruction at the University there should be an invigoration of bee-

keeping in Wisconsin to make it one of the leading States in the production of honey.

One of the interesting features at the Minnesota meeting was the talk given by Prof. Francis Jager on "Apiary Work at the University." He gave some very interesting statistics concerning the pupils who took the beekeeping course at the University. The following question was put to 150 students who took this course: "For what reason have you taken the course in beekeeping at the University of Minnesota?" Out of 150, 30 answered that they expected to keep bees after they left college. The other 120 gave various reasons, some of which were quite interesting. It was found that the 30 who stated they would keep bees after they left the university were already keeping bees. This practically refutes the statement that our courses of education on beekeeping in the universities are with the object of making *more* beekeepers. The fact is that they are making *better* beekeepers, and the few additional beekeepers which are created will be a help to the industry instead of a hindrance.

Kansas Beekeepers Meet in Convention

The Kansas Beekeepers' Association meeting was held at Topeka Nov. 20 and 21. It was decided to divide the State in three sections with a vice-president for each district. They are the southwestern under Dr. A. D. Raffington, of Hutchinson, northwestern (fifth and sixth districts), with Harry A. Huff, of Chapman, with the eastern (first, second, third, and fourth distincts) under A. R. Hackensmith, of Topeka.

Officers for the ensuing year are: President, C. D. Mize, of Mount Hope; vice-president, Dr. A. D. Raffington, of Hutchinson; secretary-treasurer, O. A. Keene, of Topeka.

Plans are already laid for district meetings. By organizing a new association at Hutchinson and the district association to cooperate with the State association, it is hoped to make Kansas the banner State for bees and honey.

The subjects read and discussed at the meeting were as follows:

"The Financial Side of Queen-Rearing"—A. V. Small, St Joseph, Mo.
"Shipping Bees by the Pound to the North and West"—M. C. Berry, Hayneville, Ala.
"Public Exhibits of Bees, Honey, Wax, and Apiary Supplies"—Dr. G. Bohrer, Chase.
"Cooperative Advertising of Honey"—Geo. W. Williams, Redkey, Ind.
"Swarm Control"—M. G. Dadant, Hamilton, Ill.
Discussion—"Securing State Aid for Foulbrood."
"Report of Inspection Work in the Northern Half of Kansas"—Prof. Geo. A. Dean, Agricultural College, Manhattan.
"Report of Inspection Work in the Southern Half of Kansas"—Prof. S. J. Hunter, State University, Lawrence.
"The Production of Extracted Honey"—Harry A. Huff, Chapman.
"Selling the Crop"—J. P. Brumfield, of Galena.

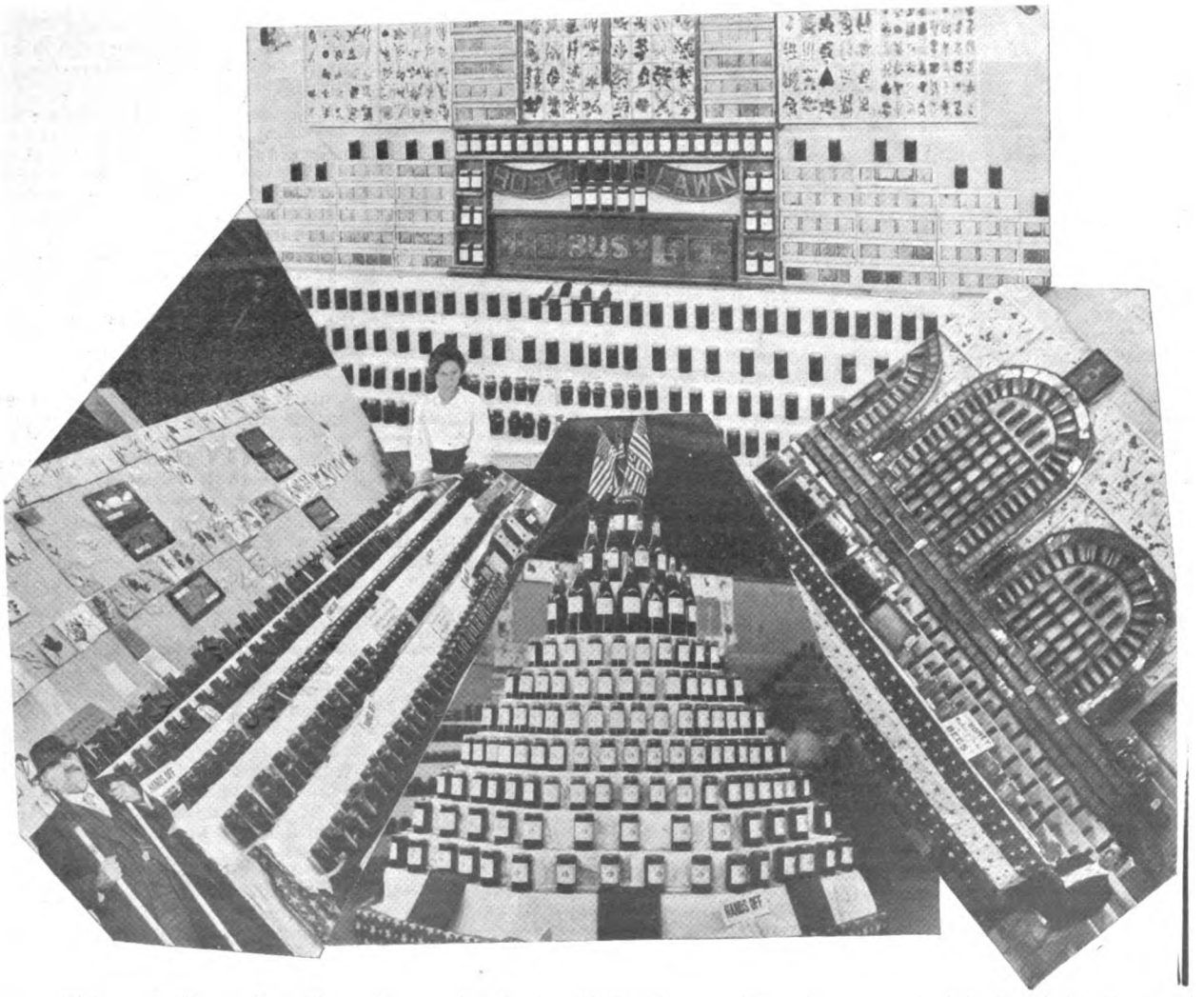
KANSAS STATE FAIR.

The Kansas State Fair at Hutchinson Sept. 16 to 23 was a success in every respect. Dr. G. Bohrer, of Chase, says it was one of the largest and best he has ever seen. The exhibit of honey occupied 1845 square feet of space. If there had been more space the beekeepers could have made a better showing.

Next year they hope to have a new bee building and have the Horticultural Society in the same building.

Ontario Meeting

The meeting of the Ontario Association, Dec. 12–14, at Toronto, was attended by about 200 beekeepers, a number of whom are large producers conducting outapiaries. The crop was good in 1916, and the meeting was therefore enthusiastic, especially as the honey has been sold at remunerative prices. The Ontario beekeepers have a committee on prices, whose duty it is to collect information from the members as to the amount of honey harvested and recommend a certain price for the crop. This season, although



Some exhibits at the Kansas State Fair. Above is the display of W. J. Measer, of Hutchinson; on the left, that of J. P. Lucas, of Topeka; in the center, below, that of A. D. Raffington, and on the right the exhibit of J. A. Nininger, of Nickerson

the crop was large they recommended as high a price as last year, not without some misgivings. But the greater demand for honey, owing to better advertising and the higher prices of sweets in general, helped the sales and the crop is almost entirely gone, with a brisk demand in prospect for 1917.

Very interesting addresses were given by the president, Mr. Krouse, and Messrs. Armstrong, Webster, Chrysler, Sladen, Bisbee, Duff, Evans, Deadman, Bainard and others. On the evening of the second day, a banquet attended by nearly 100, was followed with an illustrated address by Wm. Couse, on the past presidents of the association. Mr. Couse outdid himself, by the lively interest he created, with anecdotes and interesting information concerning leading men of the past.

It would take more space than we can give to mention all the interesting points brought out during the three days of the convention. We will mention but a few.

Mr. Webster spoke of the Alexander idea of keeping nine or 10 queens laying, at one time, in one hive. He had tried this to his heart's content and considered it difficult to keep even two queens in one hive, separated by a queen excluder, during the honey crop. The old plan of nature of a single queen in each hive is still the rule, in spite of theories.

Mr. Bisbee indicated a method for finding a queen readily. The hive is raised from its bottom-board and placed over a cloth which has been painted with carbolic acid a day or two previously. A queen-excluder and a hive full of combs are placed over the colony. The bees and the queen ascend in the endeavor to escape the odor of the carbolic fumes and the queen is retained by the queen-excluder upon which she is found invariably in a very short time.

The purchase of pound packages of bees in early spring was discussed in a lively manner, especially after the arrival of Mr. Achord, of Alabama, who has had great experience in the shipping of bees. A criticism was made by several purchasers of the shortage of food given them by shippers, for long distance shipment. It appears that most of the losses in transit may be ascribed to this shortage. The recommendation was made to hive these bees on drawn combs and to avoid shaking them out in front of the hive, as in that case some of the bees get lost.

The association has a very active secretary, an excellent president and enthusiastic membership. Success is certain.

The meeting was held in the hall of the Hotel Carls-Rite. This was very satisfactory; the weather was stormy and the hotel accommodations were of the best and quite reasonable. We will long remember the comfort and pleasure of this meeting.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

Fermented Honey

1. From two supers from one hive and one super from another hive I found here and there cells with the capping bulged up like a water blister, and when uncapped the contents were frothy. What was the probable *cause*? Not all frames nor all supers were affected.

2. As this is certainly fermentation, will such combs be fit for use next season?

It has been suggested to me that the trouble is due to honeydew, but I have not had any experience along that line.
NEW JERSEY.

ANSWERS.—1. That beats me. The only thing I can think of is some peculiarity of the honey—or honeydew—that favored fermentation; but why should it be only in scattered cells? You will have to look elsewhere for an answer.

2. The combs will be all right to use again, provided they be cleaned up by the bees this fall, as they should be in any case.

Transferring—When?—Feeding

1. In the Guernsey method of transferring is it necessary when the new frame hive is set on the old box-hive that the bottom of the frame hive be closed except where it fits over the box-hive, the latter being smaller than the box-hive?

2. When is the best time to do transferring in this section, southeastern Alabama?

3. Is it necessary to feed bees when you leave the comb-honey supers on for winter, the colony only being of moderate strength?
ALABAMA.

ANSWERS.—1. I have not now in mind full particulars of the Guernsey method, and you do not say where it is to be found, so I can answer only in general terms. It used to be considered quite important to have everything bee-tight, above and below, but now it is not so considered. Indeed, in England, where more transferring is done than here, it is quite the thing now to have it open between the lower and upper hive, so that the bees are in plain sight as they pass up into the new hive.

2. In fruit-bloom it is the time generally chosen, as at that time the combs are not heavy with honey, and bees are also in good condition to build comb and make the proper repairs.

3. Generally it will not be necessary; yet if there is not enough honey at the disposal of the bees, feeding is imperative.

How to Keep Down Swarming

I have 11 colonies of bees and wish your advice as to how to run them for honey and increase. Our honey flow does not commence here until about July 10; no flowers except some from fruit trees. Can I begin about May 10 and feed? Would the colonies swarm before July 10, or could I divide the colonies and make three colonies of each one? In either case how much should I feed? Bees do not swarm here until during the honey flow, and swarming cuts short the honey crop.

This year I had one colony swarm about May 15. What caused them to swarm so early? They made about 150 pounds of honey.

Perhaps you could suggest some better plan. Our honey comes from sweet clover, and if I can overcome the swarming problem my bees can easily store 150 pounds of honey each season. This year only three colonies swarmed. Why was this? The old and new swarms averaged over 150 pounds each, but other years they have not done so well as they swarmed during the honey flow.
WYOMING.

ANSWER.—You say if you can overcome the swarming problem you can get 150 pounds per colony. I have been trying for 50 years to find out how to overcome that problem, and many others have been working at it, and it's still a problem. However, I have done something toward it, and if you will study my book, "Fifty Years Among the Bees," I think you will find more on the subject than can be found elsewhere.

You ask why only three of your colonies swarmed this year. I don't know. If I had full particulars, maybe I could answer, and maybe I couldn't. Neither can I say why one colony this year swarmed as early as May 15, although very likely one reason was that it was extra strong.

Whether your scheme of feeding will work depends. If there is absolutely nothing yielding from May 10 to July 10, then feeding will do great good, and you will feed steadily just enough so that there shall never be much honey ahead in the brood-chamber, perhaps not more than five pounds. If, however, there is enough honey coming in so that the queen never stops laying up to the time of the harvest, then your feeding will do harm rather than good.

The Hive to Use for Outdoor

Which of the three different hives do you prefer for outdoor wintering: No. 1, outside measurements, scant 14 inches wide, 21½ inches long, and 12 deep. Quinby pattern hive, brood-frame 11 inches deep under top-bar. No. 2, 20 inches long, scant 13½ wide, 9½ inches deep, outside measurements. No. 3, 20¾ inches long, 9½ deep, and 16 inches wide, outside measurements. Nos. 2 and 3 use Langstroth frames. My father has been in the bee business for over 50 years, and has always used Quinby hives with a dummy on each side, and has run for comb honey. He has always wintered in a bee-cellar under the house. We have 100 colonies at this time, and I am thinking of starting an outyard next year. I want to make the hive most satisfactory for wintering outdoors with good outside cases. NEW YORK.

ANSWER.—I should expect a little better wintering in the first hive mentioned, with its deeper frame and more nearly spherical shape.

Kind of Bees—Swarms—Requeening—Transferring

1. I am sending a sample of bees I have in my apiary. Kindly tell me what kind they are.

2. What causes bees to start to work at the bottom of a super instead of at the top.

3. When my bees swarmed out this year the swarms were small. What was the reason?

4. What causes a swarm of bees to go away without alighting?

5. In introducing a queen to a colony what causes the bees to kill her and rear one of their own?

6. I have a swarm of bees in a box-hive which I would like to put in a movable-frame hive. Could I take the bottom-board off of the box-hive and put it on top of a new hive with full sheets of foundation just like a super? Will the bees be likely to go down and work in the new hive and stay there when they get their old hive full?

7. What causes a colony to get queenless?

8. I didn't get all my requeening done this fall. If I put in new queens in May will that prevent them from swarming?

9. I was feeding a colony about four pounds of honey this fall for about four days. Will they start brood-rearing?
MINNESOTA.

ANSWERS.—1. I have some doubt whether the man is yet born who can take three or four dried-up dead bees and tell what kind they are. Certainly I can't. Alive, they might or might not be told; death makes the case harder still. The specimens sent

may be blacks, and they may be something else.

2. One reason may be that the super is too high for the number of bees there are to fill it, especially if 'there be nothing to bait the bees above. I have known a strong colony to begin building up from the top-bars when an empty hive-body was placed over it.'

3. Like enough because they were after-swarms. When a colony throws off four or more afterswarms, the last of them may be no larger than your fist.

4. It is a very rare thing that a prime swarm goes off without alighting; indeed some claim that they never do. An after-swarm may go off without settling, possibly because its queen is a virgin, and in lighter trim for flying.

5. Probably because she is a stranger to them and they don't want any interlopers.

6. Yes.

7. Often a bungling beekeeper; and sometimes a virgin is lost on her wedding flight with nothing in the hive from which to rear another queen.

8. Like enough, provided the new queen be one just reared.

9. Not very likely, if the queen had stopped laying.

Pickled Brood

During the month of July I noticed in my apiary one colony of bees that was full of dead brood; worker and drone brood alike were affected with the same disease. Combs were full of brood, some dead in cells after capping, but most of the brood had died before being capped, and quite a few dried down and dark in color.

I sent a sample in size of about 2x3 inches to Washington, D. C. After two weeks I received a letter from there stating that the trouble was perhaps pickled brood, and no treatment was necessary; but still a positive diagnosis of the case could not be made from the sample I had sent. Later on I found a couple of colonies that were also slightly affected with the same disease.

This fall I noticed that the bees had cleaned out, or nearly all, the dead brood, excepting about two to four capped cells to each side of the brood-comb. The cappings are normal.

This colony was boiling over with bees all summer, but did not swarm.

How could I prevent this malady from spreading?

Is there any known cure for it?

Would you advise destroying the brood-comb and super comb of the sick colonies?

Would it be advisable to place this colony some distance, say about 50 to a 100 feet from the main apiary next spring, if they live that long? WISCONSIN.

ANSWER.—If it is pickled brood there is no need to do anything beyond doing all you can to keep colonies strong and in good condition; it should disappear without spreading, and it is not advisable to destroy combs or to move colonies 100 feet away.

Swarm Prevention

1. Can you give me the best way to prevent swarms? I confess that I hardly understand your methods of swarm prevention by dividing as mentioned in "Fifty Years Among the Bees."

2. Do you lift your hive with ¾-inch blocks where you use 2-inch entrances?

3. If I don't want to divide, I would like to cage the queen and leave her in the brood-chamber on the bottom-board for ten days; if queen-cells appear I destroy all of them, and again in five days I destroy them and later free the queen. Is this a good way?

4. Some writer said if a queen is left in the cage ten days it would cause foulbrood or some other disease. What do you think about it? INDIANA.

ANSWERS.—1. I am very sorry that the matter is not made entirely clear to you in the book "Fifty Years Among the Bees." I do not believe I can give you anything better here, but if you will tell me the part that is not clear to you I shall be only too glad to give any further explanation I can

2. No; with a bottom-board and entrance two inches deep, and a bottom-rack to prevent the bees building down, I do not raise the hive on blocks. I think, however, that the additional blocking-up would be a further help against swarming, although a good bit of trouble.

3. This plan was given by G. M. Doolittle many years ago, only he used it *after* a colony had swarmed instead of before. I used it for some years with success, and always felt thankful to Mr. Doolittle for the plan.

4. I think it's nonsense.

Beekeeping Near Seattle

1. With honey retailing here at Tacoma and Seattle at 15 cents per pound section, and 25 cents per pint extracted, would it not be more profitable to extract?

2. How much comb honey should I be producing before it is profitable to purchase an extractor (or how many colonies)?

3. What is the relative weight between honey comb and its contents, and how much more honey is it generally considered can be produced by extracting?

4. Last winter was the worst in years for this section, nearly a month of snow and below freezing weather. Usually we only have a week or ten days hard freeze with a few scattering frosts with lots of rain. Would it be best for me to winter in a cellar? I have single-walled hives and reduce the entrance to one-third. WASHINGTON.

ANSWERS.—1. Yes, decidedly.

2. If you intend to give up bees at the end of next season, it might not be worth while to get an extractor unless you have eight or ten colonies. But if you intend to continue, increasing your apiary, I should say it would be better to get an extractor if you have only two or three colonies.

3. According to Root's "A B C and X Y Z of Bee Culture," a section weighing a pound will have a little more than one-half ounce of wax. Arthur C. Miller says 100 pounds of chunk honey built without foundation will yield almost exactly three pounds of wax. It is generally estimated that bees will produce 50 percent more extracted honey than comb. Some put it as high as double.

4. My guess would be that outdoor wintering should be the better, but I'd rather take the experience of beekeepers on the spot.

Location

If you were to start beekeeping again what State would you choose? SOUTH DAKOTA.

ANSWER.—The likelihood is that if I were beginning over again would begin in whatever State I happened to be living in. There are other things beside bee-pasturage, not the least being the ties that bind one to the old locality. I happen to be in a place that is none of the best for bees, and I have a good many times thought that if I were beginning over again I'd choose a better location, and yet as I grow older I don't feel so sure about it. I have noticed a number of cases in which men have moved hundreds of miles to better their locations, yet in a very few years many of them would be found back in the old home. On the whole, it would be rather a bad thing if some one location should be decided the best in the world, and all beekeepers should at once decide that was the best place for them.

SPECIAL BRANDS HAVE HELPED INCREASE DEMANDS FOR HONEY

A Beginner

1. I intend to run for comb honey; which would you advise 8 or 10 frame hives?

2. If I buy a couple of spring swarms (next spring) will they give a fair yield next summer or must I buy colonies that have been wintered to get a good yield of honey? MASSACHUSETTS.

ANSWERS.—1. The likelihood is that the

10-frame is safer for you. However, if you use the same frame in each, it will be easy for you to try both kinds before you fully settle the question.

2. A strong swarm that issues when bees first begin to swarm should give you a fair yield of honey; yet if there is not too much difference in price you will be better off with a colony that has wintered over. It would give you increase and honey, while the swarm would give you only honey.

Queen Excluder—Section Folder—American Foulbrood

1. Which is the best queen excluder?
2. Is there a better and quicker section folder than the Friedman Greiner?
3. I saw a statement that about 100 percent more comb honey is stored, when combs are already built, as when bees have to build them.
4. How is the Hassinger way, in the American Bee Journal for 1916, pages 164 and 166, and are the beeswax scales better for comb honey, or is it likely to be all drone-comb?
5. Can American foulbrood be cured by a healthy queen and a healthy 20-days old brood, taking away the sick colonies at noon and putting the queen above a wire-screen for a day with the healthy brood, then letting them unite the second day. This would save the shaking plan. Put the diseased colony over another diseased colony by the N. E. France plan. There is less work, no loss in bees, honey, comb or beeswax. I have not fully tried the hospital plan, but think it will work. CALIFORNIA.

ANSWERS.—1. I have had no experience with the wire excluders; but being smooth they may be better than excluders of perforated zinc, provided they are perfect in construction.

2. So many different section folders have been offered that I cannot say.

3. While some claim that bees will store 100 percent more in drawn combs than in foundation, not more than 50 percent is generally claimed. Much depends upon circumstances; in some cases, in a very poor flow, and with a weak colony, the gain might be more than 100 percent, for the bees might store a little in drawn combs and nothing at all with only foundation.

4. I know nothing about the matter except from reading the article to which you refer. In that Mr. Hassinger seems to have a good knowledge of his subject.

5. Your plan contemplates saving combs in which American foulbrood has been. I don't believe such combs would be safe, although with European foulbrood they might be.

REPORTS AND EXPERIENCES

Fair Average in Spite of Drouth

In spite of the dry weather continuing through July, August and September, the season of 1916 was very favorable for beekeepers in Shawnee and surrounding counties.

My 17 colonies increased to 27, and surplus averaged 65 pounds, all comb honey. We have no trouble in disposing of our crop at fair prices. People will always buy clover honey for its color and mild flavor.

Topeka, Kan., Nov. 20. A. R. SMITH.

Many Bees in One Yard

I have just finished the season which nets me 754 24 section cases of comb honey besides over 4000 pounds of extracted. 280 colonies produced this in one yard, or about 75 pounds average per colony.

Delmar, Iowa. FRANK COVERDALE.

Honey Sold Out

My honey is all sold at the present time at 10 cents per pound for extracted and 15 cents for comb. The summer crop was three-fourths and the fall flow one-fourth.

Bunceton, Minn. J. R. MARYE.

Honey All Sold

I won first premium on basswood extracted honey and second on granulated basswood honey at the Minnesota State Fair this fall. Four inches of snow came today. Bees are in fair shape for winter. I have sold all of my honey already, fifty 60-pound cans at $6 25 per can. FAYETTE LEE.

Cokato, Minn., Oct. 20.

A Good Average

Here is our report for 1916: Twenty colonies, spring count, increased to 36. Took off 1000 pounds of comb honey and 2000 pounds of extracted honey. Quality was never better. EDWARD BLACKSTONE.

Drouth Interfered

Last year I started with one colony of bees and increased to two. I wintered the two colonies in the cellar and both lived. Now I have six colonies. They have a good supply of stores at present in the hives. A new kind of bee which the bees killed in the hive is black with a long body and wings, also long legs.

There is plenty of alsike and white clover around here, which yielded fine until dry weather came.

We had no rain here from about June 20 until the corn was in roasting ears, then we had so much rain that the corn is not very good and lots of it is soft.

LEWIS CLEAVELAND.

Wilmont, Minn., Oct. 20.

Commercial Beekeeping

Not alone from personal experience, but also from observation, do I believe in commercial beekeeping. It pays not only financially, but in many other ways as well, for I do not know of a happier or more contented people than the beekeepers. That which is said of men in other walks of life may be said of the beekeeper, "They are born, not made."

If one is to make a success of beekeeping his greatest essential need is to take a natural interest in the bee, and its ability to look after the details of the business. When but a boy I wondered how men could keep so many bees and look after them. I afterwards found that one must have a system and work the system. Oftentimes people will ask how I can keep and manage 75 or 80 colonies with all my other work? The only way I can answer is to say I plan my work during the winter so that when the busy season is on it is easy to do the necessary work with the colonies. I find one of the greatest essentials is being on the lookout for the detail work in the apiary. Doing that which is necessary on each visit; not putting off until a more convenient time.

If one intends making a business of beekeeping one needs a good location. Bees are more profitable where there is plenty of fruit; also near some stream, where there are plenty of linden trees, buckbrush, autumn flowers, and white clover.

Mr. Pellett, of Atlantic, Iowa, in his third annual inspection report on page 15 says: "The few millions the bees add to Iowa's product yearly, is a net addition to her wealth. The presence of large numbers of bees also greatly increases the production of fruits and seeds of many kinds by better cross pollination of the blossoms, so that but a small a part of the revenue derived from the bees is represented in the direct product of honey and wax."

The most important factor in commercial beekeeping is the equipment for the apiary. The beekeeper should have a scientific knowledge of the diseases of bees so that he is able to detect trouble at once.

"Knowledge is power," and it is the beekeeper who is informed that is capable of detecting and caring for diseased colonies who can make a success of the bee-industry. Only the pure races of bees are best. There has been quite a little discussion on this subject in the bee journals. From my own experience I find that breeding queens from my own yard pays. I prefer either the golden or the leather-colored Italians because they are more gentle, more prolific and better disease resisters than other races which I have had in my yards. He should use the hive with movable frames. I use the 10-frame Langstroth in my yards and find that style best adapted for my use for both extracted and comb honey.

It is reported that in the United States the number of beekeepers is becoming less, but the number of bees is not decreasing accordingly, which proves that there are more people who are specializing in beekeeping than ever before. J. W. STINE.

Stockport, Iowa

Flood in August

I am sending you a photograph of the flood we had in August. The water was in my bee-yard, and it would have caught my bees again but the water did not come as badly as last year, and that made it safe this time.

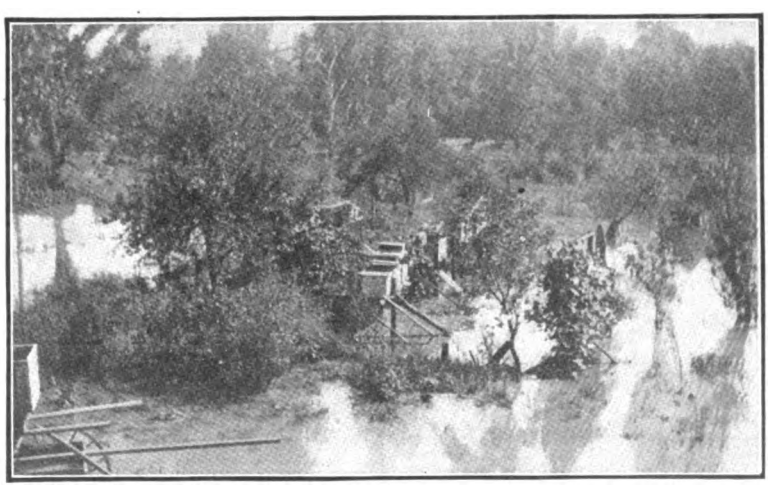
The bees did fairly well this season. The fall flow was not as good. I started with 12 colonies, spring count, and increased to 34. I produced 700 pounds of comb honey. Bees are all strong and healthy and have enough stores for winter. LOUIS WERNER.

Edwardsville, Ill., Oct. 17.

Hunting Bee Trees

I have done more or less hunting of bees in the woods for the past 15 years.

First, we must understand that when bees leave for a new home and go to the woods



Distant view of an apiary during flood times in 1916. Apiary of Louis Werner

they invariably try to locate their new home along a creek or where water is easily reached. In the fall flowers are all gone so they have nothing to work on. I generally look along places that I would consider a good watering place, and if successful in finding a bee I catch her, put her in the bait box which I provide myself with, having filled the old comb-cells with diluted honey or syrup made of granulated sugar. Don't make the syrup too thick, as it takes the bees too long to load up and too long to unload. Also provide yourself with some old comb, and in case you cannot find bees in any other way burn some old comb, and if you are near bees they will smell the comb burning and will come to it.

The bait box I use is about 6 inches wide, 6 deep, and 8 long, with a slide top or cover, and a strip of glass in the top of the cover. As soon as you can see the bee filling herself with the bait, gently slide the cover open, and when she is filled up she will come out of the box and circle around, close at first, and will keep working farther away, and then make three or four large circles and finally dart in a straight line for home.

Get the line and you will soon have a box full, and as soon as you have lots of bees working follow up the line, moving your box as you go a short distance at a time. I have timed bees many times when leaving the bait box for home, and where they go about one mile it invariably takes them about 15 minutes to go home, unload and get back.

When they lead you in a thick clump of timber and you have trouble in locating the tree, and you are not sure but what they passed through the timber, move your bait box to the opposite side, after shutting the cover with a lot of bees in the box. Then let them out, and if they still make for the thick clump of timber, you can come to the conclusion they are in there somewhere. Sometimes you will find them in a tree or log that is lying down, and sometimes they enter a standing tree down at the roots, which is sometimes difficult to locate. Two weeks ago I helped take the bees and honey out of a down hemlock, and we got more than 100 pounds of honey and saved the bees and queen, brought them home, set them to keeping house, pinched the queen which was black, and gave them a nice Italian queen in place of the black one. They were as gentle as the most gentle Italian bees I ever saw. JOHN A. STEVENS.

Mio, Mich., Nov. 16.

The National at Madison.—The annual meeting of the National Beekeepers' Association will be held at Madison, Wis., on Feb. 6, 7 and 8. All beekeepers who can possibly do so are urged to attend. It is hoped to develop plans at this meeting which will be a distinct aid to all members and all other beekeepers.

North Carolina Meeting.—A meeting of the beekeepers of North Carolina will be held in Board of Trade Hall, Board of Trade Building, Winston-Salem, on Thursday afternoon and evening, Jan. 11, 1917.

This meeting will be in cooperation with the extension work lately started in the State, and every beekeeper in the State should make their best endeavor to be present and help boost the good work along. It is expected that a State organization will be effected at that time.

Dr. E. F. Phillips will give an illustrated lecture and Mr. E. R. Root is expected to fill a large place on the program.

Several live papers will be presented by local beekeepers. The North Carolina Live Stock Show will be on in Winston-Salem at that time, and many beekeepers will have a double reason for attending.

All beekeepers whose names are listed in the department's records at Raleigh, will receive a circular of the meeting. If your name is not now on the department's mailing list, please write at once to one of the following, giving your name and address, number of colonies kept and kind of hives.

FRANK SHERMAN, JR., *Entomologist.*
GEORGE H. REA, *Specialist in Beekeeping.*

Classified Department

[Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS.

PHELPS' Golden Italian Queens will please you.

THREE-BANDED ITALIAN bees and queens Send for our 1917 calendar—it's free.
A. E. Crandall & Son, Berlin, Conn.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

PLACE your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens. John W. Pharr,
Berclair, Tex.

PHELPS' Golden Italian Bees are hustlers

VIGOROUS prolific Italian queens, $1.00; 6, $5.00. My circular gives best methods of introducing. A. V. Small,
2302 Agency Road, St. Joseph, Mo.

FOR SALE—7500 pounds of bees in combless packages, starting April 1, 1917. Better write us before it is too late to have your order booked. Marchant Bros.
Union Springs, Ala.

A LITTLE AD in our classified columns will sell that perfectly good equipment that you no longer need. Only 15 cents per line each insertion.

MY BRIGHT Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

BEES FOR SALE—1000 lbs. in 1-lb. packages at $1.00 per lb. Untested Italian queens, 70c extra, to be shipped April 1 to 20. All orders must be in by April 1.
T. W. Burleson, Waxahachie, Tex.

BUSINESS First Queens descriptive price list tells all about them and my $10 free offer. Tested queens ready now. Order early.
M. F. Perry, Bradentown, Fla.

GRAY CAUCASIANS, exceptionally vigorous and a long lived race of bees; are known as the most gentle of all bees. Free circular and price list. Orders booked now for spring delivery. F. L Barber. Lowville, N. Y.

FOR SALE—Apiary of bees at Tularosa, N. Mex.; up-to-date appliances, good bees, good bee location, and fine climate to live in. Selling because of death of late owner, J. A. DeWitt. N. B. DeWitt,
Care El Paso & S. W. Ry., Douglas, Ariz.

PHELPS' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y.

TELL several thousand people what you have for sale with a few words in this department.

GOLDEN QUEENS that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00; Breeders, $5.00 and $10.00.
2Atf J. B. Brockwell, Barnetts, Va.

BEES FOR SALE—A number of well established apiaries in Frio, Bexar and Atascosa, Texas, in the mesquite and guajillo belt have been listed with us for sale on their present sites. Can also furnish bees in car lots.
Southwestern Bee Co., San Antonio, Tex.

GOLDEN ITALINAN QUEENS bred strictly for business, that produce a strong race of bees as honey gatherers By April 1, untested, 75c each; 6 for $4.25; 12, $8.00; 100, $60. Tested, $1.50. Safe arrival, prompt delivery and satisfaction guaranteed.
L. J. Dunn, 50 Broadway Ave., San Jose, Cal.

QUEENS, Doolittle and Moore strain, also GOLDENS that are GOLDEN. One select unt. $1.00; 6, $4.25; 12, $8.00. Tested, $1.25.
Bees by the pound a specialty, One 1-lb. package, $1.25; one 2-lb., $2.25; large lots less, also nuclei and colonies. Ready March 15th. Booking orders now. Circular free.
J. E. Wing, 155 Schiele Ave, San Jose, Calif.

BEES WANTED—Wanted to buy bees within shipping distance of Atlantic, Iowa. Would prefer to buy f. o b. Atlantic, in ten-frame hives. Give full information concerning hives, bees, frames, etc., together with price in first letter. Would consider any number from fifty colonies up to carlot.
Frank C. Pellett, Atlantic, Iowa.

HONEY AND BEESWAX

WANTED—Honey in any lots from any point. The Honey King, Mahnomen, Minn.

WANTED—Comb, extracted honey, and beeswax. R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

MUST have extracted honey at once. Write to E. Strubel,
1302 Louse Ave., Milwaukee, Wis.

WANTED—Small lots of honey for bakers' use. C. W. Finch,
1451 Ogden Ave. Chicago, Ill.

No. 1 white comb, $3.50 per case; No. 2, $3.00. No. 1 fall comb, $3.00; No. 2, $2.50; 24 sections to case. H. G. Quirin, Bellevue, O.

WANTED — Extracted alfalfa honey and wax. Send sample of honey, price, etc.
A. E. Burdick, Sunnyside, Wash.

WANTED — White extracted honey also light amber in any quantity. Send sample and lowest cash price.
E. B. Rosa, Monroe, Wis.

WANTED—Wax and old combs for cash or to make up on shares. "Best quality" foundation made and sold cheap in small lots.
J. J. Angus, Grand Haven, Mich.

COMB HONEY our specialty. Highest market prices obtained. Consignments of Extracted Honey also solicited.
Albert Hurt & Co., New Orleans, La.

WANTED—Extracted white clover and light amber honey. Will buy in lots of 1000 pounds to a carload. I pay cash. State what you have and send sample with lowest price. Write. M. E. Eggers, Rt. 1, Eau Claire, Wis.

WANTED—Well ripened white extracted honey, preferably alfalfa and sweet clover or white clover. Send sample and price to
The Colorado Honey Producers' Association
1424 Market St., Denver, Colo.

WANTED—Extracted honey in both light and amber grades. Kindly send sample, tell how your honey is put up, and quote your lowest cash price, f. o. b. Preston.
M. V. Facey, Preston, Minn.

FOR SALE—65 cols. Italian bees $4.00 per col.; 10 cols. hybrids, $3.50 per col. All from J. T. Moore's strain, and in 8-frame hive bodies in winter cases; standard full depth self-spacing Hoffman frames, 8 to each hive, all combs straight; cols. strong and healthy with stores for winter; would bunch the lot for $3.25 per col.; a few untested Italian queens, 60c each. Wilmer Clarke,
Earlville, Mad. Co., N. Y.

I NEED a large supply of extracted honey, must be white clover or its equal. 60-pound packages preferred. Quote your lowest cash price f. o. b. here. Send sample if you are interested. F. Bender,
221 Pub. Square, Nashville, Tenn.

FOR SALE—Our own crop of extracted white clover honey in barrels or cans. This is as fine quality white clover as we have ever seen. Write for prices and state quantity wanted. Dadant & Sons, Hamilton, Ill.

HONEY WANTED—We are in the market for light amber grades of honey, also off grades which are suitable for baking. If you have such honey to offer, please send us sample, state the quantity you have, how packed and your lowest price for same.
Dadant & Sons, Hamilton, Ill.

SUPPLIES.

WANTED—Cheap honey extractor in good order. J. D. Sherwood, Ft. Madison, Iowa.

THE PERFECT Bee Frame Lifter. For descriptive circular address,
Ferd C. Ross, Box 194, Onawa, Iowa.

WANTED—Small extractor in good condition. G. N. Larson. Altona, Ill.

FOR SALE—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside. Wash.

BEE-KEEPER, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
4Atf Paris, Tex.

FOR SALE—One Detroit Kerosene Engine 6 hp., used but little, as good as new. Will sell for $75; cost $95 new.
The M. C. Silsbee Co., Rt. 3, Cohocton, N. Y.

GOOD second-hand 60-lb. cans, 2 cans to the case, 30c per case, in lots of 10 cases or less. In lots of 25 cases or more, 25c per case. These prices are f. o. b. Cincinnati.
C. H. W. Weber & Co.,
2146-48 Central Ave., Cincinnati, Ohio.

WANTED—We often have inquiries for old bee books and Bee Journals, and will be glad to buy and sell these for our patrons. Let us know if we can do something for you along this line. Address,
American Bee Journal, Hamilton, Ill.

FOR SALE—800 new metal spaced brood-frames, No. 2 stock, nailed and wired, at $3.00 per hundred or 400 for $11. Also 100 loose hanging brood-frames nailed, No. 2 stock, at $2.50. The M. C. Silsbee Co.,
Rt. 3, Cohocton, N. Y.

SITUATIONS.

WANTED—Beekeeper familiar with Rocky Mountain conditions to handle bees on shares. Can make good offer. Write stating age, experience, etc.
A. H. Dunn, Fort Collins, Colo.

WANTED—Single man for season of 1917, with knowledge of orchard work and bee-keeping preferred. State age, experience and wages in first letter.
Baxter Bros., Leavenworth, Kan.

WANTED—A position in a large apiary. Understand both comb and extracted honey productions, and can assist in queen rearing, as I understand the business. Would prefer position in the southern States. Address, J. R., Care of American Bee Journal,
Hamilton, Ill.

WANTED—Position by expert in tropical apiculture. Will go to any part of the world, but prefer an English speaking country.
Address, Tropical Apiarist,
Care Dadant & Sons, Hamilton, Ill.

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HONEY LABELS that have broken away from the all-look alike bunch. Made to suit your ideas. Lowest prices. Samples FREE. Liberty Pub. Co., Sta. D, Box 4 H. Cleveland, O.

MISCELLANEOUS

FOR SALE or trade, hotel in live Minnesota town. Will exchange for land or bees or both. Romen Grebin, Preston. Minn.

THE FIRST OFFER of $8.00 takes my 22 calibre center fire single shot Winchester rifle, like new, cost $14. Cartridge similar to 25-20. Address, John J. Ellers, Rt. 3, Winona, Minn.

Write for price list and booklet descriptive of our
HIGH GRADE ITALIAN QUEENS
And Bees by the Pound
JAY SMITH
1159 DeWolfe St.
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Give the Children Honey
NATURE'S OWN CONFECTION
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FOR SALE HERE

Attractive cards like the above for store windows will help sell honey. Size 9x11 inches. Printed in two colors. Price, 5c each; six for 25c, postpaid.

Another card gives cuts showing relative food value of honey and other products. These cards are the same size as the above, and in two colors. Just the thing to place in stores to push sales of honey. Prices 5c each; six for 25c. Postpaid.
American Bee Journal, Hamilton, Ill.

"ROUGH ON RATS" ends RATS, MICE, Bugs, Don't Die in the House. Unbeatable Exterminator. *Ends* Prairie Dogs, Gophers, Ground Hogs, Chipmunks, Weasels, Squirrels, Crows, Hawks, etc. The Recognized Standard Exterminator at Drug & Country Stores. Economy Sizes 25c, 60c, Small 15c. Used the World Over. Used by U. S. Govt. Rough on Rats Never Fails. *Refuse ALL Substitutes.*

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American Bee Journal, Hamilton, Illinois

HONEY AND BEESWAX

CHICAGO, Dec. 18.—Comb honey continues to drag. One hundred pounds of extracted to 10 pounds of comb is about the average in sales during the past month. So active is the demand in extracted that the price has advanced on all grades 1c or about per pound, The best grades of white clover are now commanding 10c per pound, and it looks as though all of it was going to go into consumption before the coming of another crop. Various reasons have been assigned for the unusual consumption of extracted *vs.* comb. One we frequently hear is that it is taking the place of butter and preserves as children are now getting honey on their bread instead of jam.

Beeswax sells at from 28@30c per pound for the ordinary grades, and if free from sediment and bright in color, 32c per pound.
R. A BURNETT & CO.

KANSAS CITY, MO., Dec. 18.—The honey market is slow, about $2.85 being the top price for fancy white comb honey down to $2.50 for No. 2. On account of the raise in the local freight rates, the consumption of honey has been curtailed considerably, but we understand that the railroads will adjust these rates after the first of the year and we believe there will then be a better demand for comb honey. Extracted is firm at 7½@9c a pound, and No. 1 beeswax is selling at 25c a pound.
C. C. CLEMONS PRODUCE COMPANY.

CHICAGO Dec. 19.—The honey market is very quiet and we are very much surprised for the reason that it is the cheapest commodity on the market. We have over two carloads of comb honey on hand. We have already sold three carloads up to date, but it looks as though we are going to have a better demand after the first of the year. We are selling 24 section cases for $2.75 to $3.00, extra heavy weights glass fronts $3.25. Extracted honey is in light supply and the demand is very active, selling 9@10c.

Beeswax ranges from 27@32c, according to quality and brightness. We are advertising the honey liberally in the different ways in order to create a bigger demand. Let us all work as best we can. D. J. COYNE.

DENVER, Colo., Dec. 18.—The demand for comb honey in carload lots is light, but we have never seen such an active demand for extracted as of late, as there is practically no stock left in the producers' hands throughout the Rocky Mountain region.

Comb honey, fancy, $2.84; No. 1, $2.70; No. 2, $2.57. Extracted honey, white, per pound, 9@9½c; light amber in cans, 8½@9c. Beeswax, we buy and pay for clean, average yellow beeswax, per pound 28c in cash and 30c in trade.

As our business in honey is principally to jobbers we quote jobbing prices.
THE COLO. HONEY PRODUCERS' ASS'N.
F. Rauchfuss, *Mngr.*

SAN ANTONIO, Dec. 15.—Stocks of honey are pretty well cleaned up. There is no bulk comb left in the hands of producers. Extracted in limited quantities is bringing 8@9c. Beeswax prices are 27c cash and 30c exchange SOUTHWESTERN BEE CO.

NOTICE TO SUBSCRIBERS

We are obliged to cancel many of our prices of combinations of the American Bee Journal with bee books. Those desiring to take advantage of the combination offers will please disregard former offers and order per the followng list, which gives postpaid prices for the United States. For Canada add 10 cents for yearly subscriptions and for foreign countries add 25 cents:

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Doolittle's Scientific Queen Rearing.....	.50	1.25
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Original Langstroth (reprint).....	1.00	1.75
Productive Beekeeping.....	1.50	2.25
Beekeeping (Phillips).....	2.00	2.50
A B C & X Y Z of Bee Culture....	2.50	3.00
Dr. Miller's "Fifty Years".....	1.00	1.75
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AMERICAN BEE JOURNAL, Hamilton, Ill.

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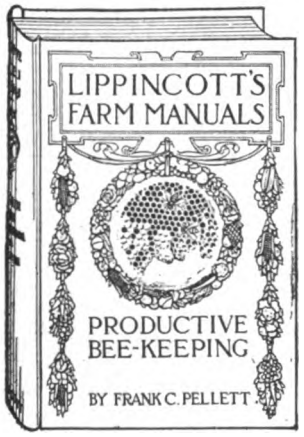
IS "PRODUCTIVE BEEKEEPING," by Frank C. Pellett



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State Bee Inspector for Iowa and a Practical Beekeepor as Well

One of Lippincott's "Farm Manual" Series, this book of 326 pages is finely gotten up, finely bound, and has 134 illustrations, nearly all original with the author. Price, $1.50.

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American Bee Journal, Hamilton, Illinois

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This is the time of year you should get your supplies and put them together. You not only have them ready when needed, but you also get the discount.

Our catalog of everything a beekeeper uses will be mailed free upon request. Let us quote you. One pound round flint glass honey jars $5.00 a gross.

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APIARIES: Glen Cove, L. I.

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F. M. ALEXANDER
Atlantic, Iowa

The Beekeepers' Review Announcement for 1917

Mr. Floyd Markham now holds the gold medal, being offered by the Michigan State Beekeepers' Assocation for the best honey produced in the State. This medal has now been won for the second time by Mr. Markham at our last convention. Mr. Markham also won all the first prizes on both comb and extracted honey at the Michigan State Fair at Detroit this year. Mr. Markham is without a doubt the World's champion comb honey producer. How much would it be worth to you, Mr. Comb Honey Producer, to call at Ypsilanti and ask Mr. Markham all about how he produces so much better comb honey than the average beekeeper? It would likely be worth a hundred dollars to you during the few years to come; the information you would get on such a visit. You can get it all for a dollar by subscribing for The Review for 1917, for Mr. Markham will write twelve articles for the twelve numbers of The Review during 1917, telling the entire procedure of securing the exhibition honey. None who aspire to greater things in beedom should fail to read how Mr. Markham accomplishes such results.

Mr. J. E. Crane is no stranger to the beekeeping fraternity. He has written much at different times relative to his method of beekeeping. We consider ourselves fortunate in securing Mr. Crane to write twelve articles for The Review for the year 1917, covering the entire season with the bees. Mr. Crane's 40 years among the bees, as he will write it up for The Review will be mighty interesting reading in a book it would readily sell for a dollar. You will get this interesting series, including many other features by subscribing for The Review for 1917.

E. D. Townsend, now owner of The Beekeepers' Review, used to produce comb honey on quite a large scale. He originated the system now known as "producing both comb and extracted honey in the same super." This system if properly carried out is one of the very best systems of comb-honey production that has been brought to light. The Editor of The Review has run large apiaries on this system of producing comb honey WITH ONLY 12% OF THE COLONIES IN THE ENTIRE APIARY SWARMING. An ideal system for outyard work for comb honey. The Editor of The Review will write up this entire system of producing both comb and extracted honey in the same super for the pages of The Review for 1917. This series of articles alone ought to be worth many times the cost of The Review for a year.

Space forbids us mentioning other valuable contributions that will appear in The Review for 1917.

We will mention at this time that we are making arrangements with several of our very best honey producers to furnish us material for The Review written FROM ACTUAL EXPERIENCE of several years standing. We will mention just one more of our 1917 correspondents who has 400 colonies of bees. He works the entire 400 colonies for extracted honey alone, in about 100 days, doing the work alone and securing very favorable crops. This party also sells his honey all in his home market at a price much above what is usually secured by producers. There will oe many more valuable articles in The Review for 1917, including all the valuable papers read at the National Convention at Madison, Wis., next February. We hope there will be none of the readers of the American Bee Journal so short sighted as to miss sending in his dollar for The Review for 1917. Address.

THE BEEKEEPERS' REVIEW, Northstar, Mich.

BUY
THE FAMOUS DAVIS GOLDENS
And get big yields from gentle bees.
Write for circular and Price list.
BEN G. DAVIS
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20 Packets Seeds—10c.

We want every reader to test "HARRIS SEEDS THAT HUSTLE." Send 10c. now—before you forget for this mammoth collection. We send you 20 separate packets finest varieties—one each—of Beets, Carrot, Cabbage, Celery, Cucumber, Lettuce, Cress, Muskmelon, Watermelon, Onion, Parsley, Parsnip, Radish, Salsify, Spinach, Tomato, Mixed Poppies, Giant Cosmos, Double Jap Calendula and Children's Botanical Garden, a curiosity collection of flower seeds. With this collection we send rebate check for 10c. and big catalog of world's finest seeds.
HARRIS BROS. SEED CO., 184 Main St., Mt. Pleasant, Mich.

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$2.50 a Month Buys Visible Writing L. C. Smith

Perfect machines only of standard size with keyboard of standard universal arrangement—has Backspacer—Tabulator—two color ribbon—Ball Bearing construction—every operating convenience. **Five Days' Free Trial.** Fully guaranteed. Catalog and special price free.
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Net prices for cash, or on convenient payment terms bearing simple interest.

Send for special-sale list of second-hand and slightly-used upright pianos, $75, $100, $125, $150, $175, and $200.

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Sweet Clover Seed
QUICK GERMINATION

Get our "Scarified," sweet clover seed which will germinate from 85 to 95 percent the first year and thus insure you a good stand right from the start. By sowing our seed you will save money, as it only takes about half as much scarified to sow an acre as ordinary hulled seed.

PRICES

	1 lb.	10 lbs.	30 lbs.	100 lbs.	Per bu. 60 lbs.	5 bu. lots per bu.	10 bu. lots per bu.	Lbs. per acre
Unhulled White Sweet Clover Recleaned	25c	$2.00	$5.10	$16.00		$ 4.80	$ 4.50	25 to 30
Hulled White Sweet Clover recleaned and scarified	30c	2.75	6.75	22.50	$13.50	13.00	12.50	6 to 10
Hulled Yellow Sweet Clover, recleaned and scarfied "Melilotus Officinalis"	20c	1.80	5.10	17.00	10.20	9.50	9.00	8 to 12

When seed is wanted by parcel post, be sure to include postage. Bags will be included in the weight in parcel post shipments.

PLEASE NOTE—All of our seed is thoroughly cleaned. The scarifying process usually breaks some of the seeds and we remove all broken seeds. This is an important saving to you. Samples on application.

YELLOW SWEET CLOVER—Many people fail to recognize the value of the biennial yellow sweet clover as a honey plant. The fact that it blooms two weeks earlier than the white variety makes it especially valuable to the beekeeper.

Be sure, however, to get the biennial variety as quoted above.

DADANT & SONS, HAMILTON, ILLINOIS

I Want to Send You My New 1917 Seed Book FREE

For 30 years I have furnished seeds of highest quality. **Thousands of customers attest to this fact.** They know my seeds—their growing and yielding qualities. They know of my honest methods. **My seeds must make good or I will.** 30th annual catalog now ready.

Lists All Kinds Farm, Garden and Flower Seeds

The best arranged, most comprehensive and easiest catalog to order from ever issued. Offers the best.

Potatoes, Oats, Corn, Barley, Wheat, Clover, Alfalfa, Vegetables, Flowers.

Send for it Today. Get FREE Packet Flower Seeds.

If you mention this paper, will include a packet of choice Flower Seeds.

L. L. OLDS SEED COMPANY
Drawer 12, Madison, Wis.

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Romarkable Discovery that Cuts Down the Cost of Paiut Seventy-Five Percent

A Free Trial Package is Mailed to Everyone Who Writes

A. L. Rice, a prominent manufacturer of Adams, N. Y., has discovered a process of making a new kind of paint without the use of oil. He calls it Powdrpaint. It comes in the form of a dry powder and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone or brick, spreads and looks like oil paint and costs about one-fourth as much.

Write to Mr. A. L. Rice, Manufacturer, 23 North Street, Adams, N. Y., and he will send you a free trial package, also color card and full information showing you how you can save a good many dollars. Write today.

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Bugs could damage this country more in 10 days than a foreign war could in 10 *years!* What prevents them? The birds.

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The Farm Journal

201 Washington Square, Philadelphia

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THE NEW GLEANINGS IN BEE CULTURE FOR JANUARY?

Better and more valuable to the Beekeeper than ever before. The January number is full of valuable articles and beautiful illustrations. No man or woman really interested in bee-culture can afford to be without it. Send for free sample of the January issue. Address,

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Everybody knows Campbell, the father of dry farming. Everybody knows that he started this great movement for Scientific Farming that is changing the desert into a garden. But everybody does not know that there is a great school, the

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where the Campbell System of Scientific Soil Tillage and Crop Growing are taught by mail, where a thorough knowledge of Scientific Agriculture can be secured without leaving home, at a very small expense. If you are a farmer or expect to be a farmer, send for the Campbell literature, Campbell's Scientific Farmer, the Campbell manuals, and a catalog of the Campbell Correspondence School. Sample copy and catalog free. Address,

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American Bee Journal, Hamilton, Illinois

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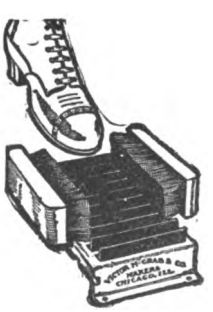

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AMERICAN BEE JOURNAL
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For the Bee Man
This is the Period
"Between Hay and Grass"

While waiting for the honey-season to begin, suppose you investigate the relative values of different commercial woods. Few business undertakings call for more exacting care on the part of the buyer than getting the best lumber for the bee-man's use. In many respects bee-hive construction is like Greenhouse construction—both are most trying on the material used.

Cypress is the only wood that "stands up" in Greenhouse work. It resists the rot influences that infest the Greenhouse. No other wood is so thoroughly certified for this use as is Cypress.

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Those who would get accurate information regarding Cypress wood and its extraordinary power to resist rot influences should provide themselves with copies of the Cypress Pocket Library. There are 42 volumes, each authentic and authoritative. **Write us** and tell us what subject you are interested in and will send you the appropriate booklet. We especially suggest that you **write for Vol. 1,** with the unabridged U. S. Govt. Rept. on Cypress, "The Wood Eternal," that is a **buy** because it lasts so like—well, it lasts and lasts and lasts and lasts and lasts.

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for you. If you prefer, we will pay you our best trade price in exchange for BEE SUPPLIES.

Send for our terms. We feel sure that we can save you some money besides saving you a "mussy" job.

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AMERICAN BEE JOURNAL

FEBRUARY, 1917

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And get big yields from gentle bees. Write for circular and Price list.

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Bees and Queens for 1917

GOLDEN AND LEATHER COLORED

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Prices of one and over	1	6	12	25
Virgins	$ .50	$2.75	$ 5.00	$10.00
Untested	.85	4.50	8.00	16.00
Warranted	1.10	5.50	9.50	19.00
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Breeders	3.00 and up to $10.00 each.			

1-frame nuclei without queen.....$1.50
2-frame " " 2.75
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When queens are wanted with nuclei add queens at above prices quoted for queen

½ lb. package, wire cages, without queens.....$1.00
1 " " " " " " 1.50
2 " " " " " " 2.00

If queens are wanted with pound packages add at prices quoted for queens.

On all orders amounting to $50 and over we will allow 5 percent discount, and orders amounting to $100 and over will allow 10 percent discount from above prices.

We guarantee safe delivery on queens, and safe delivery on bees that are not in transit over five days.

OUR REFERENCE—Any Mercantile Agency, A. I. Root Co., or American Bee Journal.

Get into communication with us at once and book your orders early to avoid disappointments in the spring.

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Representatives of The A. I. Root Company, and Queen Specialists.

Sweet Clover Seed

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Get our "Scarified," sweet clover seed which will germinate from 85 to 95 percent the first year and thus insure you a good stand right from the start. By sowing our seed you will save money, as it only takes about half as much scarified to sow an acre as ordinary hulled seed.

PRICES

	1 lb.	10 lbs.	30 lbs.	100 lbs.	Per bu 60 lbs.	5 bu. lots per bu.	10 bu. lots per bu.	Lbs. per acre
Unhulled White Sweet Clover Recleaned	15c	$1 35	$3 50	$11.00		$ 3.30	$ 3 20	25 to 30
Hulled White Sweet Clover recleaned and scarified	25c	2.25	6 00	18.00	$11.00	10.50	10.00	6 to 10
Hulled Yellow Sweet Clover, recleaned and scarfied "Melilotus Officinalis"	15c	1.25	3 50	11.00	6.75	6.50	6.00	8 to 12

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Be sure, however, to get the biennial variety as quoted above.

DADANT & SONS, HAMILTON, ILLINOIS

The CANADIAN HORTICULTURIST AND BEEKEEPER

The only bee publication in Canada

It is the official organ of the Ontario Beekeepers' Association, and has incorporated with it the former Canadian Bee Journal

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By buying your supplies of me. All kinds of Bee Supplies and Berry Baskets, Crates, etc. Send for new **1917** list free.

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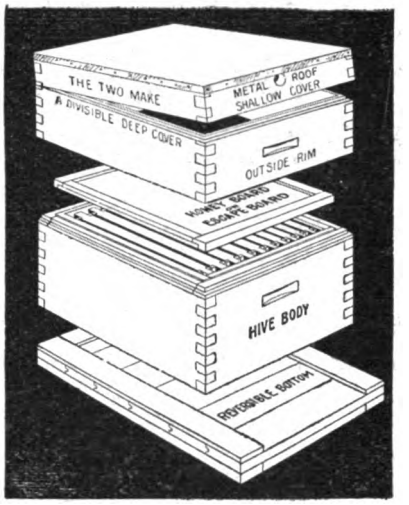
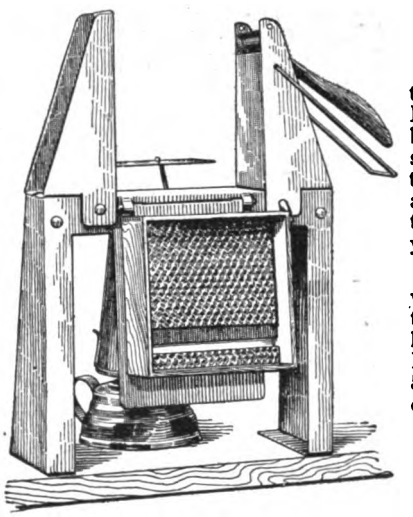
Price $13.75 for five hives, f. o. b. Grand Rapids, Mich. Delivered prices furnished on request.



Double-wall with air spaces, insulation or packing as you may prefer. Over an inch of space between the outer and inner walls. Total wall space two and a quarter inches. If you have ever had occasion to spend any time in a building, single boarded, during cold weather, you can appreciate the advantages of double walls. Even with a red hot stove, you are freezing on one side and roasting on the other. Double walls relieve this condition and reduce the quantity of fuel necessary. Honey is the fuel, the bee the stove. The life of the bee as well as the stove depends upon its work; do not burn them out. Send us a list of your requirements for 1917, and let us figure with you. Small as well as large orders are wanted. Let us add you to our list of many pleased customers in all parts of the country.

A. G. WOODMAN CO., Grand Rapids, Michigan



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A combined section press and foundation fastener of pressed steel construction. It folds the section and puts in top and bottom starters all at one handling, thus saving a great amount of labor. With the top and bottom starters the comb is firmly attached to all four sides, a requirement to grade fancy. Increase the value of your crop by this method.

H. W. Schultz, of Middleton, Mich., in writing us says: "Your Section Fixer is the best yet; can put up 150 sections per hour with top and bottom starters." Price with lamp $2.75. Shipping weight 5 lbs. Postage extra. Send for special circular, fully describing this machine.

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Nearly forty years on the market and the standard in this and many foreign countries. It is the all-important tool of the most extensive honey-producers of the world. For sale direct or by all dealers in Beekeepers' Supplies.

Smoke Engine, 4-inch stove	28 oz.	$1.25
Doctor, 3½-inch stove	26 oz.	.85
Two larger sizes in copper extra.		.50
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Hinged cover on the two larger sizes postage extra.

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Send this office $2.00 and get both postpaid

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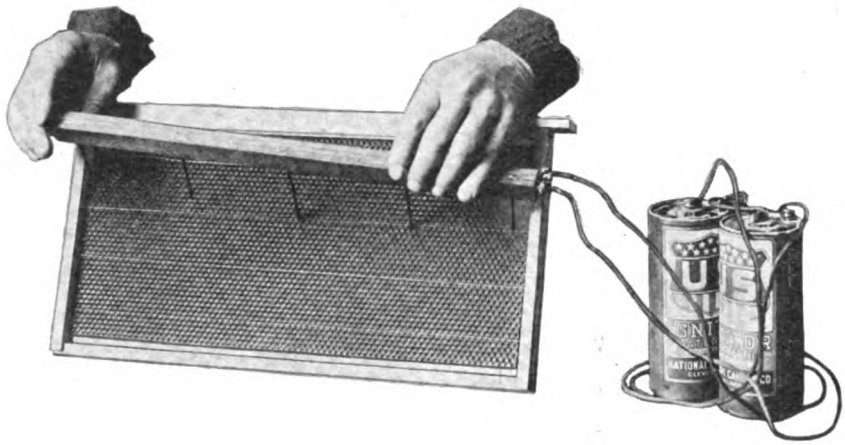

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Price without batteries. - $1.00 **Mailing weight 1 pound**

Price with batteries - $1.80 **Mailing weight 6 pounds**

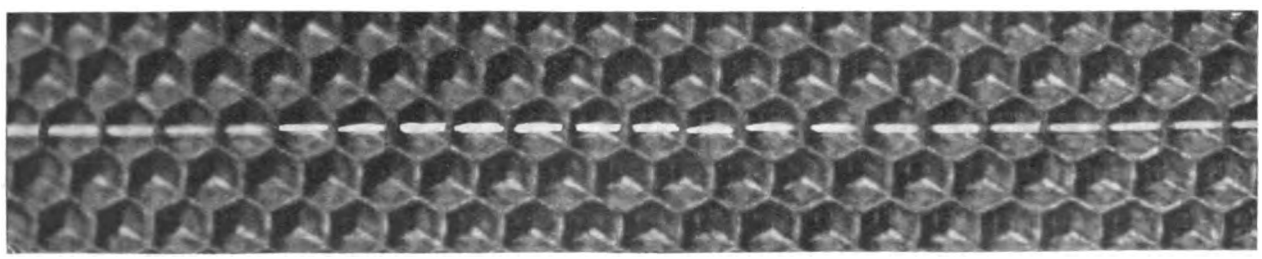
SIMPLE TO OPERATE—All that is necessary is to connect device to two dry cells and go ahead.

ECONOMICAL—Two dry cells will imbed a thousand or more brood-frames with four wires. Can be left connected and will not burn the current except when in actual use. Saves its cost in a short time.

DURABLE—Made of wood, copper and brass, and will last a lifetime.

CONVENIENT—Can be used where city current is not available. This makes it especially valuable for the outyard or for the farmer beekeeper.

EFFECTIVE—Far ahead of any other device on the market. Cements the wire in the foundation as though it had grown there. The slight pressure on the wires is just enough to push the hot wire into the cell walls.



This cut shows how well the wires are cemented into the foundation. When wired in this way foundation may be kept in the frames indefinitely without danger of becoming loosened. Send in your order today. Ask for our 1917 catalog. We list several new items which will interest you.

DADANT & SONS, Hamilton, Illinois

Shipping Cases for Comb Honey

Don't make the mistake of putting a fine lot of section honey in poor shipping cases. It will lower the price to you and damage your future sales. **"Falcon"** cases are A No. 1, and will be a credit to any crop of honey. Prices are as follows:

Shipping Cases in Flat, Without Glass

No.		10	100
1	holding 24 sections, 4¼x1⅞, showing 4	2 00	18 00
3	holding 12 sections, 4¼x1⅞, showing 3	1 30	11 00
1½	holding 24 sections, 4¼x1⅞, showing 4	1 90	17 00
6	holding 24 sections, 3⅝x5x1⅞, showing 4	1 80	16 00
8	holding 24 sections, 4x5x1⅞, showing 4	1 80	16 00

Shipping Cases, With Glass

Number and description	Nld	In flat, with 3-in glass			With 2 in. glass
		1	10	100	100
11 Same as No. 1	35	.25	$2 30	21 00	20 00
13 Same as No. 3	.22	.15	1 40	12 50	12 00
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Red Catalog, Postpaid **Dealers Everywhere** **"Simplified Beekeeping," postpaid**

W. T. Falconer Mfg. Co., Falconer, New York

Where the good bee-hives come from

Beekeepers' Supplies

Now is the time to order your supplies for next season, and have everything in readiness for next spring. Take advantage of the early order cash discounts, and send us a list of the supplies wanted, and we will be pleased to quote you. We will mail you our catalog upon request; in short, we handle everything a beekeeper requires for the proper conduct of an apiary—Root's goods at factory prices.

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FOR

JOHN M. DAVIS

1917 Queen Prices

SPRING HILL, TENN.

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Let Us Figure With You

We know we can satisfy you on price and quality. Write for catalog.

C. C. Clemons Bee-Supply Co.
Dept. S., Kansas City, Missouri

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Send for new 1917 price list, now ready. Give us a chance to bid on your wants. We can save you money. We are in the market at all times for extracted honey in any quantity.

THE M. C. SILSBEE CO.,
Haskinville, New York
Post-office, Cohocton, Rt. 3, N. Y.

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Beeware Brand

ON ALL YOUR

HIVES, SUPERS AND SECTIONS

BEWARE

WHERE YOU BUY YOUR

BEEWARE

WATERTOWN, WIS U.S.A.

MAKES THE FINEST

OUR NEW 1917 CATALOG

IS NOW OUT

Be Sure to Get Your Copy

G. B. LEWIS COMPANY, Watertown, Wis.

AMERICAN BEE JOURNAL

Vol. LVII.—No. 2 HAMILTON, ILL., FEBRUARY, 1917, MONTHLY, $1.00 A YEAR

COMMERCIAL QUEEN REARING

Methods of Wholesale Production of Queens at the Davis Apiaries as Seen by Our Staff Correspondent

BEEKEEPING is getting more highly specialized every year. Where formerly the beekeeper produced both comb and extracted honey for market and also reared his own queens and a few to sell, the beekeeper now is either a comb or extracted honey producer or a queen-breeder. The larger the business the less the inclination to cover too much ground.

Since the demand for queens is growing so rapidly, we have a double purpose in mind in presenting this article to our readers. First, we wish to supply the information as to how good queens can be reared on a large scale and second we feel that our readers would like to know something of the methods of the men with whom they deal. Accordingly we have decided to describe the queen rearing apiaries of some of the better known breeders from time to time as opportunity offers.

Since J. M. Davis, of Spring Hill, Tenn., is probably the oldest queen-breeder in the United States, having been in the business for 44 years continuously, it seems fitting that his work should be the first to be described in this series. While Ben. G. Davis, his son, conducts his business entirely apart from that of the father, the two can best be considered in a single article.

As a young man J. M. Davis was employed as a telegraph operator for the L. & N. railroad. The business of the road was not heavy at the little town where he was stationed, and, having much time on his hands he became interested in bees. Like many another who has taken up beekeeping for the fun of it, he soon found in it the possibilities of a serious business. Because of the uncertainty of the honeyflow in his locality, he decided to follow queen rearing to insure a reasonably certain income. Although in the beginning he cared for his small business in connection with his job, he shortly found it to his advantage to devote his entire attention to his bees. The name Davis has appeared so frequently in the bee journals for so many years that few names among the beekeeping fraternity would sound more familiar to our readers.

THE DAVIS LOCATION.

Middle Tennessee is generally considered as one of the finest agricultural sections of America. It is a most beautiful country and the mild climate makes it a desirable section for a home. Spring Hill is located

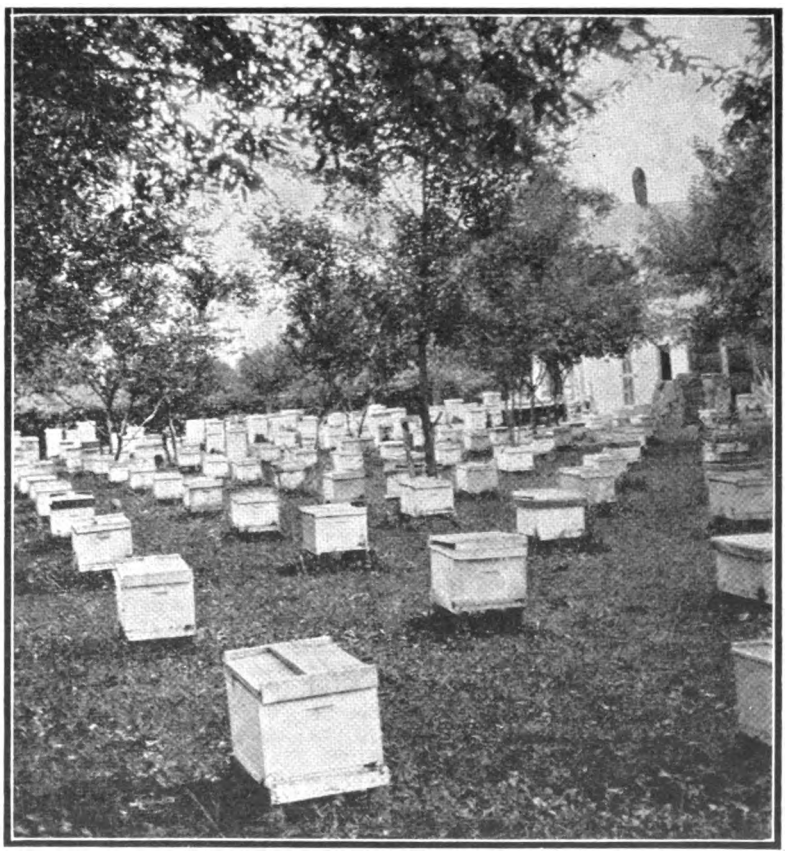

FIG. 1.—A CORNER OF THE J. M. DAVIS QUEEN-BREEDING APIARY

about thirty miles south of Nashville. The Spring Hill postoffice and village is located about a mile from the railroad. Strangely enough the railroad has given the station the name "Ewells" instead of calling it by the same name as the post office. This leads to some confusion. The Davis homestead is located between the town and the station so that while living in the country they have all the conveniences of the town right at the door. The father, J. M. Davis rears three banded Italians exclusively, while the son, Ben G. Davis confines his entire attention to the goldens. Ben is unmarried and makes his home with his parents, but his apiary is several miles distant to avoid mixing of the strains of bees.

Our first illustration shows a corner of the J. M. Davis yard. At the time of my visit there were about fifteen hundred nuclei in the two yards. The systems followed by father and son differ in several things. J. M. Davis uses four compartment nuclei for mating purposes as shown in the second illustration, while Ben uses only two divisions for a full colony as shown at Fig. 3. The four compartment hives have an opening at each side and one at each end to avoid mixing of the bees or danger of the queens entering the wrong compartment on returning from their mating flight. These compartments are lettered, A, B, C, and D and when manipulating them, it is the habit to begin always at A and follow through the regular system to avoid mistakes. Figure 4, shows a part of the Ben Davis yard. Double the number of hives are necessary to mate the same number of queens by his system that his father requires,

FIG 3.—BEN. G. DAVIS AND HIS MATING NUCLEI

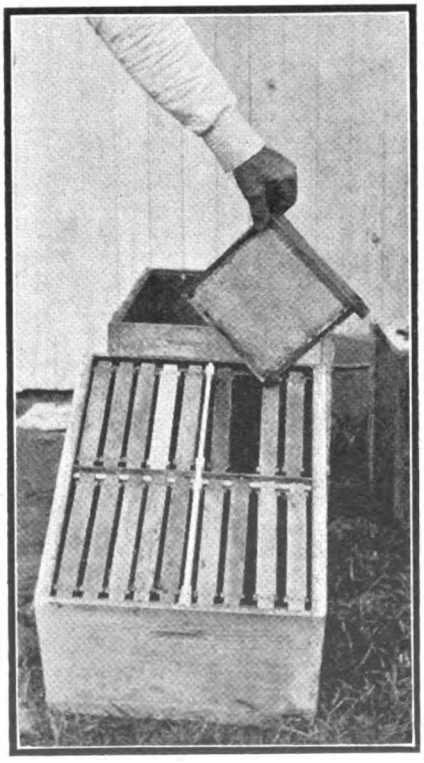

FIG. 2.—THE FOUR COMPARTMENT MATING HIIVES USED BY J. M. DAVIS

since each hive has only two compartments instead of four. Just in front of this yard is a small stream which furnishes an abundance of water at all times. This is an important matter when so many bees are kept in one place. On page 341 of our October number was shown the watering device in use at the home yard.

GOLDENS OR THREE BANDED?

Until recently I have been prejudiced against golden bees. Now I am not sure about it. It depends more upon the strain of bees than upon the color. The few golden queens that I have had in my yards have not been particularly good, while some of the three banded queens have made a remarkable showing. Goldens are often said to be bad robbers and thus more likely to bring home foulbrood, bad tempered and not particularly hardy. As far as I could see there was no difference in the bees in the two yards in any respect aside from color. The goldens are more beautiful and are very popular on that account. At the time of my visit there was little honey coming in from the field, yet there was no tendency to rob in either apiary.

We went into the yard and examined a number of colonies without using smoke, yet the bees showed no inclinations to resent our presence. Ben remarked that he never used a queen as a breeder where it was necessary to use smoke in handling the colony and the goldens in this yard seemed fully as gentle as any three-banded Italians that I have seen. As far as honey gathering is concerned, I learned from J. M. Buchanan that his best colony had gathered 250 pounds of surplus while the next best produced a hundred pounds less. The big production was from a colony headed by a golden. While I am not quite ready to abandon the three-banded Italians for goldens I have lost most of my prejudice against them and from now on will look more to the strain of bees than to whether they be goldens or three-banded bees.

GETTING BIG BATCHES OF CELLS.

It takes a lot of bees to rear queens by the Davis methods. In the first place from two to four times as many bees are necessary to fill their nuclei as would be needed to fill the same number of baby nuclei. At the close of the season all that is necessary is to remove all the queens but one from each hive, remove the division boards and winter them as

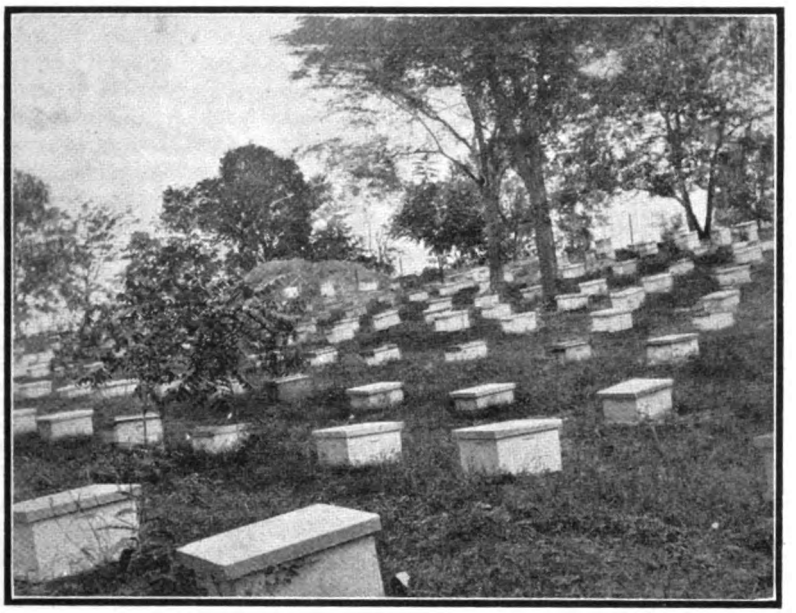

FIG. 4.—BEN G. DAVIS' QUEEN-REARING YARD

full colonies. The nuclei in the yard where the goldens are reared seemed plenty strong to winter as they were. Every effort is made to rear queens under natural conditions.

Colonies to be used for cell building are first built up until they are

FIG. 5.—ALL CELLS ARE BUILT AND FINISHED IN VERY STRONG COLONIES

very strong. The queen and all the brood is then taken away. The nurse bees having no brood to care for will accept big batches of cells and few of them will fail. As soon as the cells are well started they are taken from the cell starting colonies and given to a strong double story colony where they are finished above an excluder. As soon as the first lot is taken from the cell building colony another lot is given them. If the same colony is used for cell building for any length of time it is given frames of sealed brood to supply it with a large force of newly emerged workers to act as nurses. Cell building colonies are not allowed unsealed brood at any time, as the design is to center all their attention on the building of queen cells. Fig 7 shows 37 nicely finished cells in one lot.

I was somewhat surprised to find both father and son following the Alley plan, modified of course until it really is the Davis plan. They long ago tried the Doolittle cell cup method and abandoned it as unsatisfactory with their system. They use drone comb as a foundation for the cells. The combs are cut down until the cells are very shallow as practiced by Alley and the larvæ grafted into them as is usual with the other methods. For grafting they use the youngest larvæ, never over twelve hours old.

Their cell block for holding the ripe cells which are ready for the nuclei is something not often seen in queen yards. It is shown at figure 8. The block has two dozen cavities which hold the cells right side up. On the eleventh day the cells are taken from the finishing colony and cut apart with a sharp knife. Cells built by the Alley plan are often built so close together that some care is necessary to cut them apart without injuring the young queens. As the cells are taken from the frame they are placed right side up in the cell block. This block is carried from hive to hive and is always convenient. The cells are fastened to the side of the center combs in the nuclei where the young queens are to be mated.

Queen breeding is one of the most exacting branches of the business of beekeeping. It is necessary to plan eleven days ahead all the time and to avoid having queen cells ready to transfer on Sundays or holidays when one wishes to be away from the yard. Stormy days will often make it difficult to transfer cells that are ready or to graft new ones. To graft cells, transfer them to nuclei, and cage and mail eight to ten thousand queens in a season is a mighty busy job if the work is properly done. The breeder who does not use great care in every bit of the work will not usually last long in the queen rearing game. The public is exacting in its demands and it is only a high class product that will continue to bring the repeated orders year after year that make a queen business profitable. While the increasing interest in the business of beekeeping and the increasing number of beekeepers who buy rather than rear their queens insures the permanence of the queen breeding business, the man who is not regular in his habits, careful as to details and painstaking in all his work will do better to stick to honey production than to take up queen breeding. On the other hand the specialist who can meet the conditions finds queen rearing a fascinating and profitable line of work.

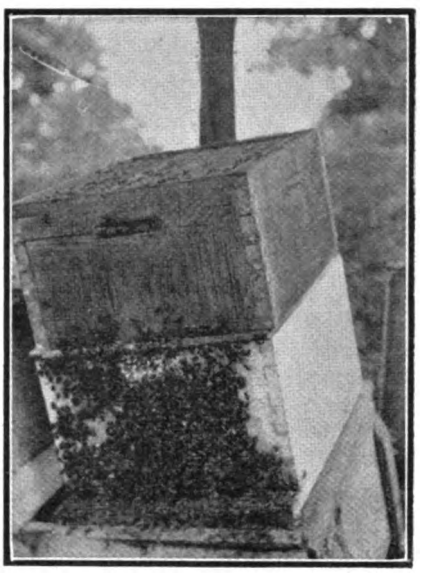

FIG. 6.—THE CELLS ARE FINISHED ABOVE AN EXCLUDER WITH QUEEN BELOW

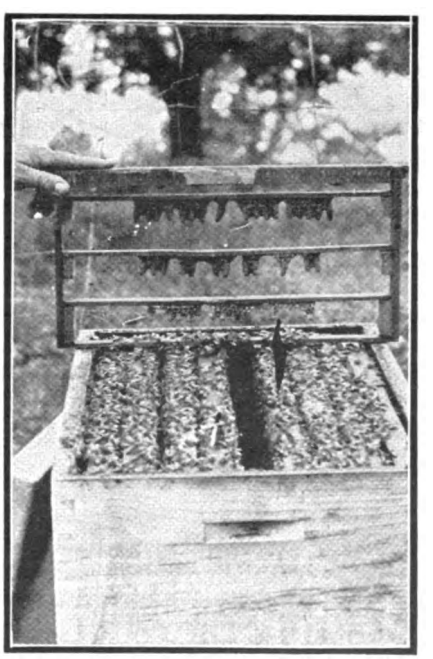

FIG. 7.—A BATCH OF 37 FINISHED CELLS

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C. P. Dadant, Editor.
Dr. C. C. Miller, Associate Editor.
Frank C. Pellett, Staff Correspondent.

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THE EDITOR'S VIEWPOINT

Those Comb Honey Rates

In our January issue we called the attention of our readers to the fact that the Western Classification Committee had made a change in their rates so as to give a lower rate on comb honey when properly protected.

Carload shipments go at fourth class rates.

Local shipments unprotected are subject to a rate which is double the first-class rate.

Properly protected shipments of comb honey will take the first-class rate, and proper protection means that your shipments must be crated, must be protected by at least four inches of straw or excelsior in the bottom of the crate, and all crates must be marked, FRAGILE—THIS SIDE UP.

We call the particular attention of our readers to these rates so that they may govern their shipments to take the lowest rate possible.

Bees and How to Keep Them

We are in receipt from the Department of Agriculture at Ottawa, Canada, of a 56-page bulletin on the above subject. It is by the well-known Dominion Apiarist, Mr. F. W. L. Sladen. It is impossible to put in so narrow limits more information than has been supplied within those pages by the author. Besides, the 40 cuts which the bulletin contains are most excellent pictures, many of them half-tones, which help the descriptions by the illustrations they furnish. The Bulletin is No. 26 (2d series), and should be in the hands of every beekeeper in Canada.

The National

The beekeepers need a strong national organization. The present association has survived numerous storms that have threatened to wreck it, and it is to be hoped that under the leadership of Prof. Jager it will profit by the mistakes of the past and gain a new lease of life.

In connection with this, the strength of the American Poultry Association is worthy of study. The last report shows a membership of 7000 and a cash balance in the treasury of more than $10,000. In addition there is a stock of books worth $8000 beside several thousand dollars worth of other property. A paid secretary is employed at a salary of $2000 per year, and he is furnished with an office assistant and stenographer.

An association of this kind can hope to be strong only by confining its activities to such things as all members find of mutual interest. The poultry association has confined its attention to educational work exclusively, and while there have been numerous differences of opinion and at times some feeling manifested, there has been no serious danger to the organization as a result. Eastern and western producers are both seeking the same markets, and every activity that tends to increase public interest in the pro luct tends to the betterment of the markets and is to the equal interest of all.

It is to be hoped that by eliminating from our association the factors which have caused the past disasters, success will come. There has been some sentiment in favor of disbanding the old organization and starting entirely new. However, it seems to be generally agreed that the work of the association will be conducted along entirely new lines.

F. C. P.

Crop Reports

Our active and efficient beekeeping representative at the Bureau of Entomology of Washington, D. C., Dr. E. F. Phillips is very anxious to see the beekeepers appreciate the usefulness of accurate crop reports. In our December number, we spoke of the Ontario people and their committee on crops and prices. They have a good system, but even there the beekeepers do not all sufficiently appreciate the benefits to be derived from an efficient crop report. If all our beekeepers volunteered to fill out the crop reports sent to them in blank, instead of neglecting them as so many do, they could secure information gathered in statistics that would enable them to set a correct value upon their honey crop. This is coming some day, for our sons will appreciate this better than we do, but we should hasten the day. Make a resolve always to fill out and mail the crop report blanks which are sent to you. If you do not receive blanks, write to Dr. E. F. Phillips, at the Bureau of Entomology, Washington, and ask for them. They will be gladly forwarded, and statistics will be returned to you when the time comes.

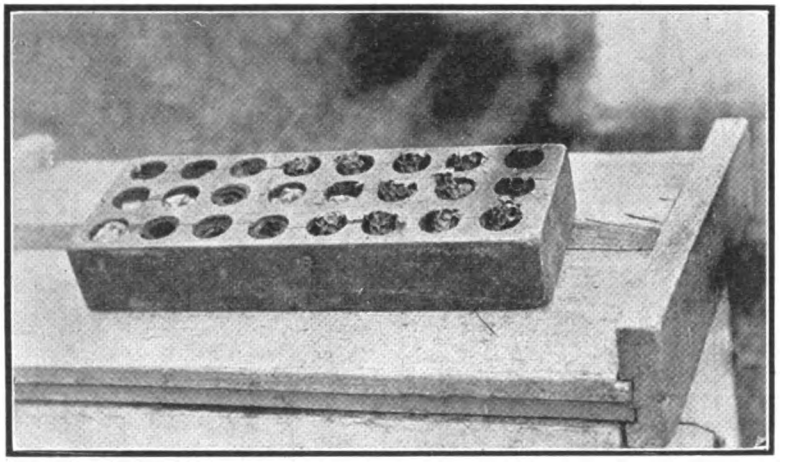


FIG. 8.—BLOCK FOR HOLDING QUEEN-CELLS (See preceding page)

Bees in Moving Pictures

Quite a little has been done already to show work in the apiary in moving pictures. But we now learn of a project in this line, by Geo. A. Coleman, of the University of California, to show

ascenario on a large scale of the natural history, anatomy and embryology of the honeybee; manipulation, comb and extracted honey production, queen rearing, diseases and enemies, manufacture of supplies, beekeeping in different countries, etc. In short, Mr. Coleman would propose to supply colleges, schools and beekeepers' conventions with all sorts of moving pictures of the bee work.

This is an immense undertaking, but we wish success to the project. Sooner or later things of this kind will be in vogue in all lines of business.

Apiary at Michigan State Prison

Mr. O H. L. Wernicke has our thanks for a copy of the Michigan State Prison Report, containing a pretty picture of their house-apiary, West Prison farm. This is probably a unique experiment. The teaching of beekeeping at the Michigan State Prison farm has already been mentioned in our September number, page 311.

Nosema Apis in Australia

The Journal of Agriculture of Victoria, Australia, contains in its October, 1916 number, page 629, a very interesting article on *Nosema apis*. It appears that this parasite is found in many healthy bees.

"Bees from 88 widely-separated apiaries were examined and the presence of the *Nosema* parasite proved in all but two, one of which was the departmental apiary at the Burnley School of Horticulture. In several instances the bees which showed *Nosema* infection came from apiaries in which no mortality or dwindling ever occurred, and it appeared, therefore, doubtful whether the presence of the parasite in the bees be in itself necessarily fatal, or whether it greatly interferes with the productiveness of the hives excepting under certain conditions due to climatic influences."

Something similar has already been noticed elsewhere. Although the presence of *Nosema* may have influence in helping to cause disease, it is quite probable that only under unfavorable conditions does the parasite have an ill influence on the health of the bees. This need not astonish any one, since we are told that the germs of tuberculosis have no effect upon healthy individuals.

Those Local Markets Again

In our January issue we urged beekeepers to keep their local markets supplied even if it was necessary to purchase honey from outside to do it.

If other extracted honey is not purchasable, there is still one loophole left so as to keep your customers supplied. Induce as many of them as you can to take a little comb honey. Comb honey is easily obtained. In fact, the market on it is dull. You can help relieve this by using a few cases locally, and at the same time you can prevent the substitution of something else for honey by your customers.

Granulation of Honey—Preventing it By Solarization

At the Toronto meeting in December last, Mr. J. F. Dunn, president of the Lincoln and Welland Beekeepers' Association, spoke of the success which he has in keeping honey from granulating by exposing it to sun heat. He would like to know whether there is any chemical change in honey thus exposed and what the change is. We believe that there must be some evaporation of moisture, and that alone might be sufficient to prevent granulation. However, it is an open question. If honey can be prevented from granulating by sun heat without too much loss of time and in large bulk, there may be some advantage in making use of the method for the benefit of customers who do not like granulated honey. There is probably no loss of flavor in such a method, as the heat would not be great enough to cause the evaporation of the volatile essential oils which give the flowers their fragrance and the honey its exquisite flavor.

We would like to have Mr. Dunn tell us his method, for publication. It should be tried and the exact amount of evaporation ascertained. Reports on this subject from different sources, next summer, will be interesting.

Mr. Dunn suggests to us that samples of solarized honey be forwarded to Mr. Alin Caillas, the Paris Agricultural Chemist, for analysis. But Mr. Caillas is at the front, in the trenches, and very little of this kind of work can be expected of him before peace comes. We must have in this country some capable analysts who can make the test.

Attend the National

Make your plans if possible so that you will be able to enjoy the three day session of the National Association in Madison, Wis., Feb. 6, 7 and 8. It will be worth your while.

Isle of Wight Disease in Liguria

Regarding the bee-disease in Liguria, mentioned on page 372 of November, 1916, we have received a letter from Engineer Capponi. He says:

"The disease of our bees was the Isle of Wight disease, for I have ascertained it through an English apiarist who lives in the infected district and who visited my apiary. He states that the disease has stopped in his district and we hope it will be the same here.

"The maximum of infection was during July, August and September. At present, Nov 5, it seems to have stopped. If it starts again, I shall send you some simple bees. But do you not think we should seek for the germs of the disease in the honey? If so, it would be well to heat it.

"In case of further trouble, I will have some of the honey analyzed and will let you know the result. But I hope the disease will not occur again."

Engineer Capponi, whom we mentioned in our "Notes from Abroad," in May, 1915, lives at San Remo, on the Riviera, where they raise roses and carnations, by hundreds of acres, during the winter, for shipment to the capitals of northern Europe, in peace times. During our visit of 1913, Mr. Capponi offered Mrs. Dadant a beautiful bouquet of carnations, almost an armful. As we reminded him of this in our last letter, he adds:

"If the signora Dadant were here at present, I could offer her much prettier flowers than then, especially General McArthur roses, American roses which grow in my garden and are magnificent."

Value of Beekeepers' Meetings

The value of an exchange of ideas at beekeepers' meetings is probably underestimated by a majority of beekeepers. The quotations following are from the "System" Magazine, clippings from which were kindly forwarded to us by a reader:

"I was told just the other day that a certain automobile manufacturer is arranging to send an efficiency engineer to the plants of his competitors—some of them manufacturers of the same priced car—to gather up ideas that might be profitably applied in his own plant. The engineer is to go, not as an 'industrial spy,' but with a letter of introduction of the manager, requesting the courtesy and offering to reciprocate.

"If there are a hundred concerns in business and each one keeps its original ideas to itself, each has the original ideas of one. If general exchange is the rule each has the original ideas of one hundred."

So with our business of producing and marketing honey. One of us may have an excellent idea, but how much better will it become if we add the original ideas of a dozen or hundred other beekeepers.

Bees Wintering About Normally

Indications so far are that bees are wintering well. Those left out-of-doors, in the central West at least, have had good flights at intervals in January. In the northern half of the country the snow has helped to protect the clover. Unfortunately, in this immediate vicinity the ground is very dry—not conducive to the best wintering of clover.

SEVENTY YEARS OF BEEKEEPING

The Second of a Series of Articles By the Editor, Reviewing the Development of Beekeeping Since 1845

AFTER the discovery of parthenogenesis, mentioned in our previous paper, the most important discovery for beekeeping was the invention of a practical movable-frame hive. The control of the colonies, to help them in all their needs, to treat them in case of disease and to promote or prevent increase, is based entirely upon the ability of the apiarist to examine every part of the hive. In 1851, Mr. L. L. Langstroth invented the first practical movable-frame hive, this invention consisting principally in frames hanging by shoulders in rabbets at each end of the hive, and separated from the hive walls by a bee-space of from ¼ to ⅜ inch. This bee-space, which prevents the bees from gluing the frames to the body, bottom or top, was the key which solved the problem of comb handling, since it obviated the faults of the former inventions.

At nearly the same time Mr. Langstroth invented this, Berlepsch, in Germany, invented a similar hive. the difference between the two being the movable ceiling. The Berlepsch hive opens from the rear, the ceiling is nailed fast, the hive resembling a cupboard. The Langstroth invention enables the apiarist to lift up any comb from the hive without disturbing the others. Only a few years later, in France, L'Abbé Sagot invented a hive almost identical with the Langstroth, which became quite popular in his vicinity before the Langstroth invention was known on the European Continent.

These inventions were far from having smooth sailing, for the French bee magazine, L'Apiculteur, established in 1856 by Hamet, and still now published, ridiculed the movable-frame hive, saying that the only advantage of these hives was the facility of their being taken apart "like a puppet-show." His criticisms were later to be overcome by an irresistible popular current in favor of the new system.

In October, 1851, Mr. Langstroth wrote: "The use of these frames will, I am persuaded, give a new impetus to the easy and profitable management of bees." This was true, and one of the first results was the importation into America of the Italian bees. Langstroth has earned and secured the title of "Father of American Beekeeping."

As early as 1842, Capt. Baldenstein, a Swiss, had brought over, from Italy to his castle in the Rhætian Alps, a colony of Italian bees. His praise of them, in the Bienenzeitung, in 1848, caused Dzierzon to try them, and soon queens were being reared by him to supplant the common race. Not only on account of their greater strength and prolificness, but because of the experiments which their introduction permitted did this race cause a progress in beekeeping. For instance, the age at which the young bees take their first flight and the length of the worker's active life were easily ascertained by the introduction of bees of a different color.

The first Italian bees brought to America were imported in 1859, by Samuel Wagner and Richard Colvin. In 1860, Parsons, of Long Island, received a number, and later many queens were imported by Adam Grimm, Chas. Dadant and others. The Italians have often been noticed working on the red clover when the common bees did not do so. Evidently in some cases their tongues are longer than those of the common bee.

The Carniolan bees were also early mentioned as better bees than the common race, by the Baron of Roschutz, though they never have been so highly recommended, owing to the greater difficulty of tracing hybridization because of the lack of plainly distinctive signs like the yellow bands of the Italians. Although the Carniolans are slightly larger and less dark than the common black bee, hybrids are difficult to distinguish.

In 1853, L. L. Langstroth published the first edition of his book, "The Hive and Honey Bee." This book, written without attempts at supplying a textbook, became the *vade mecum* of practical apiarists. Editions followed each other in rapid succession in 1857 and 1859. Shortly afterwards, Moses Quinby published his "Mysteries of Beekeeping Explained," in which he recommended a hive similar to that of Langstroth, with the same hanging frame, but of different dimensions, taller and deeper than the Langstroth standard.

In 1861, the American Bee Journal was established at Philadelphia, by Samuel Wagner. The first year of that magazine is still considered as exceedingly valuable by those who are fortunate enough to possess a copy. Articles by Dzierzon, Rev. Geo. Kleine, Berlepsch, Donhoff, our own Langstroth and other Americans who have also passed away, such as W. W. Cary and H. Nesbit, contain valuable information. The only writer still living who wrote for the Bee Journal at that date is our old friend M. M. Baldridge.

A method of securing the pure fertilization of young queens in localities where black bees were in entire control, was to retain Italian drones in queenless colonies late in the season when nearly all drones were put to death in healthy colonies. Early in the forenoon both the colonies containing the Italian drones and those having queens ready to mate were fed with warm and diluted honey, and thus incited to fly simultaneously at times when other drones would still remain in the hives. At the present day pure fertilization of queens is much better controlled by the removal of drone-comb from undesirable hives and its replacing with worker combs, while in the desirable colonies drone-comb is placed in the center of the brood-nest. It does not invariably insure choice matings but is a great step in that direction.

Golden Italians were already produced by in-and-in breeding, selecting the brightest, as reported by E. A. Brackett, "a distinguished Boston sculptor," on page 92 of the American Bee Journal for April, 1861.

Unfortunately, the Civil War, then raging, compelled Samuel Wagner to suspend the publication of the American Bee Journal until 1866, when it was again resumed by him, at Washington, D. C. The original price of $1.00 was advanced to $2.00, owing to the "greatly increased cost of paper" due to the war. History repeats itself.

In this second volume we find the name of another notable beekeeper who is still living, Dr. G. Bohrer, then of Indiana, now of Kansas. In this volume also, May, 1867, we find the first mention of comb foundation. J. L. Hubbard, of Walpole, N. H., called upon Mr. Henry Steele, of Jersey City, who presented him with a box of it, "to experiment with." But this was evidently very defective, for Mr. Hubbard suggested that sheets be made of cotton cloth or some other substance dipped into wax and impressed with the cells of the bee. It was later tried, as was tin-foil and other substances and found impractical.

A. I. Root also began in this volume his "Experience of a Novice in Beekeeping," witty and practical articles which were so well liked that he started a magazine of his own, in 1873, Gleanings in Bee Culture, perhaps the widest read magazine on our industry at the present day.

In the same year, November, 1867, Charles Dadant, began also to write for the American Bee Journal.

Adam Grimm's first large importation of Italians, from the apiaries of Prof. Mona, of Bellinzona, near Lake Maggiore, was also made in that year. He brought with him some 40 queens.

In 1868, Charles Dadant imported also largely from the Blumhoff apiaries of Biasca, near Bellinzona. But the transportation of bees across the ocean was for a long time subject to great losses, for the modern methods of packing them were unknown and shippers usually gave them too much food, in some instances literally drowning them in honey.

My next article will deal with the invention of the honey extractor.

The Winter Cluster

BY C. E. FOWLER.

I THINK Mr. Spuehler and the Editor have both missed it on page 410, December issue, when they say that the bees in the center of the cluster are more active (thus increasing the heat, as the outside is colder) *because they are in vitiated air.* I have experimented on clusters with thermometers placed over (and under

glass covers with very warm cushions over the glass and metal covered telescope covers over the cushions.

I have one in the backyard now, a very small nucleus about as large as your two fists. The thermometer outdoors is 32 degrees; over the empty part of the hive (no frames) 44, and directly over the cluster 51. The thermometers are on top of the glass, and the cluster which is ¼ inch below the glass and shows about 2½ inches in diameter, is the thickness of one bee over the frames. I can see the bees through the glass. I can see them move and see how far apart they are. I can see down into the cluster, and there is no possible chance for vitiated air to stay inside the cluster.

To return to the hive that I just looked at: There is enough warm air rising from the cluster to heat the glass 7 degrees more directly over the cluster than 8 inches away, which would give much more circulation than in summer and more than needed. Now just imagine a house with open doors all around it inhabited by soldiers *in cold* weather and the soldiers trying to close the doors by standing in them. Can you imagine them closing the openings so tightly that the house would have vitiated air in it, and the inside soldiers starting the electric fans?

In an ordinary sized room in winter a hole in the window a foot square would give more than enough fresh air. I think it would be impossible for the bees to shut off more than 75 percent of the openings. I can very easily explain why the cluster is warmer inside than it is outside. First, let us examine the cluster through the glass. If the cushion over the glass is warm enough, the shape of the cluster is similar to the letter U or a hemisphere, the warm glass forming the top of the cluster. By taking the cushion off you can see the middle of the cluster and measure the diameter of it with a rule. The colder the outside air the smaller and warmer the cluster; the warmer the outside air the larger the cluster until the outside air is 57 degrees, when *presto! change!* there is no cluster, the bees are spread all through the hive and summer has come to the bees. This will happen any warm day anytime in the winter (provided of course there is *no brood*). A few hours warmth will do it.

Now suppose the hive gets below 57 degrees, a cluster is immediately formed, then the outside bees get cold and crawl inside to get warm, and if the inside of the cluster is not warm enough they begin to rub their hands together, and as it gets colder the cluster gets smaller and the outside bees get cold quicker, and when they go inside they say, "What is the matter with you fellows, why don't you put more honey in the stores," and they fill up with honey and get warm. With a few glass covers look at the bees any time without breaking the seal and learn many things that you could not otherwise.

Hammonton, N. J.

[Yes, friend Fowler, I can imagine men huddled together so closely that those inside will have to breath the air already vitiated by their comrades. But we want all the arguments and all the opinions we can get. So let us have more.—EDITOR.]

Shipping Bees in Packages Without Combs

BY M. C. BERRY.

WHEN only 10 years of age I became interested in bees, and ever since my interest has been increasing. However, twice I was persuaded to desert the little fellows, once to attend college in Ohio, and again to engage in the mercantile business in Missouri and Colorado. But the call of my boyhood's buzzing friends was too strong, and soon I was back with them again. Now, after years of hard although pleasant work to one who loves bees, our colonies number over the thousand mark.

In the year 1904 we shipped our first bees in packages. During this year we filled quite a number of orders for bees by the pound. However, our conveniences for making cages for bees were so very crude and the mode of feeding bees while in transit so poor that after one year we discontinued shipments for the time being.

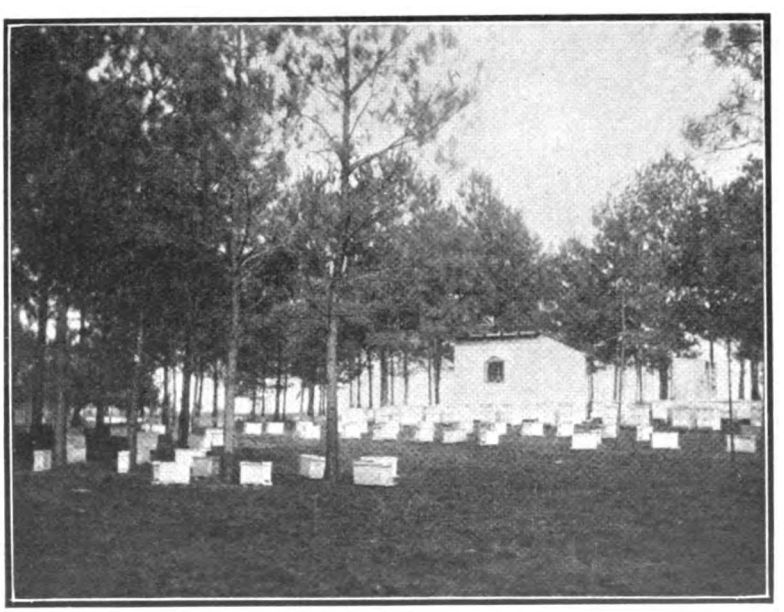
Now we have a shop as well as warehouses where during the winter months we make and store cages, to be used in the shipment of bees by the pound, besides many little mailing blocks used in sending queens through the mails. All material used in manufacturing these cages is carefully selected basswood lumber, the lightest and we believe the best for this purpose. All cages are made as light as is possible and still preserve strength for the hard handling they often get while in the hands of the express people.

At the present time we are unable to ship bees in large packages by parcel post. There may come a time when this will be possible and practical, but I believe the express method better and more advisable now, even if the post-office authorities were willing to take the larger packages. One trouble with the parcel post is lack of room and a tendency to cover up and smother the bees in mail sacks. In order that they shall go through in good condition, bees in packages must not be crowded for ventilation.

When spring comes and the shipping season draws near, we hasten to build up our colonies into an overflowing condition. This we do in order to be able to get all of the bees for our package trade from above the queen-excluders. By this method we are able to give our customers nearly all worker bees and very few if any drones. We also save a great deal of time looking for the queen before shaking the bees through the funnel into our cages. During the season just past we were able, by practicing the above methods, to take over 500 pounds of bees from one apiary of less than 100 colonies, besides making a surplus of 75 pounds of honey per colony.

One of the first and I believe most important requisites in package shipping is to have a large well ventilated cage. Next the bees must be amply supplied with food. The candy used is made of pure pulverized sugar and honey just of the right proportions to remain moist and still not run and daub the bees while *en route*. This candy is placed in the cage so that it can always be had from above. Thus the bees are able to cluster naturally and still have their food so convenient that it is unnecessary for them to break their cluster. Water is given to bees in transit only during extreme warm weather or when shipments are intended for parties living in the arid West. In such cases a small can filled with water is placed alongside the candy at the top of the cage. Bees receive the water through a small perforation which allows only a drop at a time to pass through. Excepting as above I believe water unnecessary in combless and broodless packages.

During the last few years the shipping of bees in packages has become a large industry. Safe and satisfactory delivery is made to nearly all parts of the United States and the greatest part of Canada. Beekeepers in the North and West report that bees by the pound from the South can be made to pay very handsomely on the invest-



M. C. BERRY'S DIXIE QUEEN YARD, DOWN AMONG THE PINES

ment. A one pound swarm of bees complete with a good queen very often makes a surplus of 50 to 100 pounds of comb honey during the first season. However, in order to have the best results it is necessary to get bees early in the season, say the first to the last of April, depending of course on locations. Also it is advisable, if possible, to have drawn combs partly filled with honey on which to hive the bees when they arrive. If no honey is coming in, it is also best to feed a small amount of sugar syrup (about half and half). Continue feeding until you are sure some honey is coming in, as this stimulates brood rearing.

Buying bees by the pound without queens is being practiced by many northern and western beekeepers. Many times by adding from one-half to one pound of bees to the cluster of a weak colony, especially when taking it out of winter quarters in the early spring, one is able to save a valuable queen and build up a colony which becomes strong in time to procure a nice crop of honey. Otherwise this same colony, perhaps, if it lived at all, would only get in shape after the main surplus honey flow; too late to accomplish anything this season.

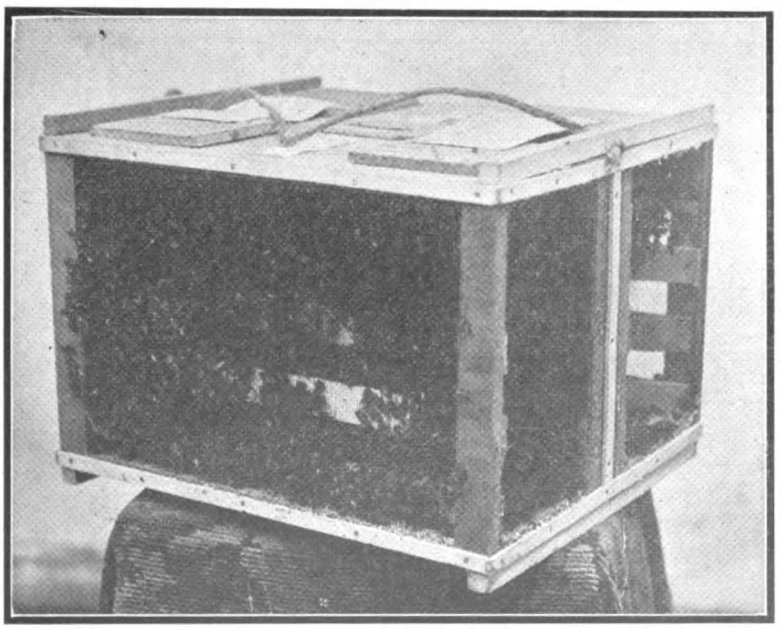
When receiving a shipment of bees from the South, we always advise the beekeeper to gorge the bees before releasing them. Sugar syrup made as above is about right for this purpose. Sprinkle this syrup on them from all sides, shake them about in the cage, and when all of the bees seem to be full as well as wet, they are ready to be shaken into the hive or else dumped in front of their new home and allowed to run in much the same as natural swarms. If one is strengthening weak colonies by adding bees, it is a good idea not only to wet and gorge the bees you are running in but also sprinkle syrup on and smoke those already in the hive. By practicing these methods one should have little if any loss from bees flying and none from fighting.

Now if one is buying bees for increase and has no combs on which to hive the swarms, we advise full sheets of foundation and also daily feeding for the stimulation of comb building as well as brood-rearing. Give each colony say from one pint to one quart of syrup daily until honey is coming in. A small pan with excelsior in it makes an excellent feeder. Put a shallow empty super on the hive, setting pan containing the syrup just over the cluster of bees. Unless the weather is very cool the bees will soon remove the syrup from the pan to the combs below.

The one pound swarms, if purchased quite early in the season will, if treated as above, build up into nice strong colonies the first year, and very often not only gather enough honey to winter but also some surplus. However, as a rule you should not expect much surplus honey when a colony has to build out combs from foundation unless there is a late fall flow. If you demand honey the first year, regardless, I would advise you to buy the larger swarms, the two and three pound sizes. Our Canadian friends advocate the larger swarms for all purposes, as the seasons there are short. Some of them even prefer the five-pound swarms, and say they are the best investments for their locality. The five-pound swarms are fine, but we have always thought them expensive.

It has been said that in time a great many northern and some western beekeepers would find it advisable to kill their bees in the fall and replace by procuring bees in packages from the South the following spring. This I do not believe advisable, nor will it be practiced to any great extent. To be sure the saving of honey perhaps would offset the cost of the bees from the South, but there would not be enough profit to make it practical. Also, would it be quite fair to the little fellows after they had toiled so hard for you? In case of winter losses, or desire for early increase and for strengthening weak colonies, bees in packages are without a doubt a success.

Hayneville, Ala.



A PACKAGE OF BEES AT THE END OF A THOUSAND MILE JOURNEY

Swiss Association—A Model to Follow

BY C. W. AEPPLER.

ABOUT one-half of the November issue of the "Schweizerische Bienenzeitung" (Swiss Bee Journal) deals with the horrors of the present war and describes the difficulties that have been encountered by the Swiss beekeepers in obtaining sugar for winter stores. As the Swiss beekeepers depend almost entirely upon sugar syrup for winter stores, it is difficult for us to realize how great a burden they are forced to bear, even though Switzerland is "a peaceful island lying amidst the howling billows."

When the war broke out in July, 1914, most of the beekeepers had no sugar on hand to provide their bees with winter stores. As usual, a high price was obtained for honey, and sugar could be fed very economically. The Swiss beekeepers must depend largely upon sugar shipped in from Germany and France. With a little successful diplomacy enough sugar was secured in October, 1914, to provide for winter stores, and so the bees were saved from starvation.

OVER A HUNDRED POUNDS OF BEES READY FOR SHIPMENT

The Swiss Beekeepers' Association is scientifically managed, and this year sufficient sugar was secured for winter stores for the 224,000 colonies operated by its members throughout that peaceful nation. When we consider the size of that little country, with its many square miles of rugged mountains, our fears of overstocking should be lessened. The 1910 census credits Wisconsin with 95,600 colonies, and Minnesota with 56,600. We have many a lesson to learn from the Swiss beekeepers. If the beekeepers of the United States were as united as they are in one common motive, the question of overstocking, better markets and better prices would be a thing of the past. What we need most is a

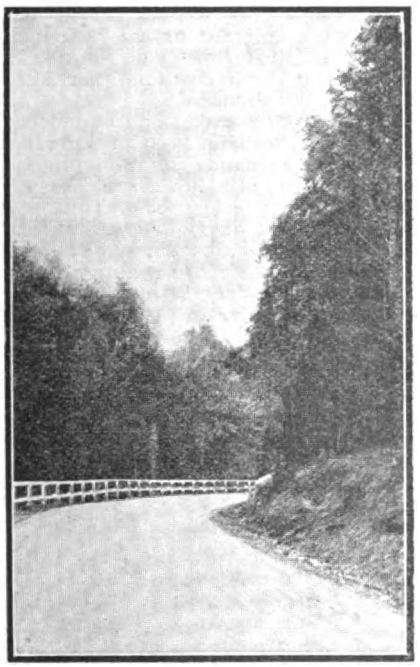
powerful *national organization* modeled after "Des Vereins Schweizerischer Bienenfreunde" (Swiss Beekeepers' Association), and when the National meets at Madison in February, it might be well for us to incorporate some of their principles with ours.

Madison, Wis.

No. 4.—Among Eastern Beekeepers

BY THE EDITOR.

LEAVING Altamont, late in the afternoon of Aug. 11, by way of Albany, we traveled 75 miles to Glens Falls, on the upper Hudson, at the foot of the Adirondacks. The road was by way of Saratoga. It is the best automobile road that I have ever traveled, not excepting European roads, for it is made of Tarvia or asphaltum and has no dust whatever. The meeting was called by the Adirondack Beekeepers' Association for the next day, at the home of Mr. H. E. Gray, one mile from the old



THE ROADS OF NEW ENGLAND ARE EXCELLENT

historic spot of Fort Edward. A pretty country, in full view of the Adirondacks, with the Hudson winding around in the woods.

At the meeting, there were as many ladies as men. The attendance was small, not over 35, but all practical people. They were all owners of large apiaries, none of them under 50 colonies. The crop was reported good and some anxiety was shown as to the probable price of honey.

Here, Dr. Gates left me to return to Amherst. I was to go alone by rail to the Vermont meeting. I remained over Sunday with the Gray family who had invited me and proposed to take me to Lake George. This trip was made with Mr. Geo. L. Cary, president of the Association, in his Ford.

Lake George was called "Horicon" by the Indians; "Lac St. Sacrement" by the French. Many of the terrible deeds of the French-Indian wars were perpetrated along its shores. Its beauty is nevertheless beyond description, despite its history. It is often said that Americans should visit America first. This is right. The resorts of Switzerland are not more beautiful than this one which compares favorably with the Lake of Thun. When our summer resorts are as old in civilization as those of Europe, there will be nothing for us to envy, in Europe. The main advantage of Switzerland is that its beauties are gathered together in a very small compass, while our country is immense and its beauties much scattered.

On Monday the 14th, I bade goodbye to my pleasant hosts, Mr. and Mrs. Gray, and left for Middlebury, Vermont. Before leaving I saw the immense paper mills of Hudson Falls, where mountains of cord wood are crushed into wood pulp for paper. Train loads after train loads of it are brought there from Canada and thousands of tons of paper produced. It seems as if we might eventually exhaust the forests, even of Canada.

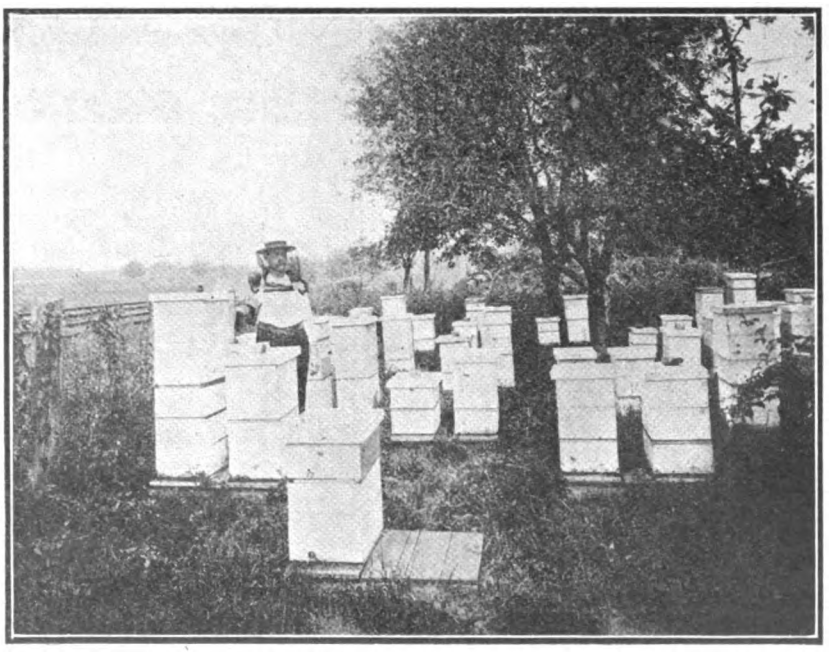
On the way to Middlebury, the road passes Rutland, noted for its marble. In spots, the railroad embankments are filled with broken marble. This reminded me of Carrara, in Italy, whose marble is shipped all over the world, and through which we passed on our trip of 1913. Vermont marble does not seem inferior to it.

At Brandon, one of the passengers walked up to me and said: "Isn't this Mr. Dadant?" It was Mr. G. F. Hendee of Pittsford. He had recognized me from photos, though we had never met before. He was going to the Middlebury meeting.

Middlebury is located in a fine, broad valley, sloping towards Lake Champlain, between the Adirondacks and the Green Mountains of Vermont. It is a good region for bees. for I met many practical beekeepers and their crop of white honey was fine. Our readers know that it is at this point that one of the oldest contributors of the American Bee Journal, Mr. J. E. Crane, lives. He and his son Phillip manage something like 1100 colonies, all in chaff hives.

The meeting was held at the Addison House, about 40 beekeepers being present. Mr. F. D. Manchester, the secretary of the Vermont Association, had kindly invited me to stop with him.

At the meeting, the main subject discussed was "Swarm prevention" and I spoke on this myself, since it is one of my hobbies. One of the points I raised was the prevention of drone production, as the presence of drones incites bees to swarm. Mr. Crane made the remark that he had found bees to build drone comb on worker foundation and called upon his foreman to make a statement on this. About a dozen sheets of foundation, out of some 2,000, used by them during the season, were changed in this way. This was a surprise to me, although Mr. Latham had already exhibited to me about 2 square inches of comb which the bees had also built on foundation and which was worker on one side and drone on the other. Dr. Miller had pronounced this an impossibility, but it was a fact, just the same. My explanation is that at times in the laminating of the foundation it becomes slightly stretched when sticking to the cylinders. The least stretching the other way, or up and down, when given to the bees, causes the forming of larger cells than common which are then used for drone breeding although hardly large enough. The foundation which is drone on one side and

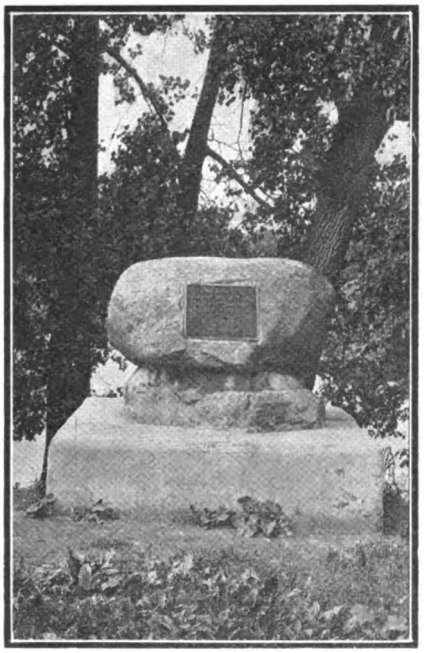


H. E. GRAY IN HIS APIARY AT FORT EDWARD, N. Y.

worker on the other must be defective in wall outline and the bees must be very desirous to have drone comb, when they overlook the shape of the base to produce such irregular combs. The only redeeming feature to this disagreeable performance is the very small proportion of such combs built, about 6 per thousand in the Crane experience. Yet, in the manufacture of foundation we ought to be able to forestall this entirely. When it happens, the only way is to remelt such combs and replace them with perfect ones.

At the Manchester home, that evening, I saw a sample of success with very large hives. Mr. Manchester uses 11-frame Langstroth hives, with supers holding 40 sections and he had a tremendous crop of clover honey, both alsike and white clover. In many sections of the East, alsike clover grows wild in the meadows and the pastures.

At this place I also tasted pure dandelion honey for the first time. We often see the bees on dandelion blossoms, but with us they never harvest enough to make a surplus. I was skeptical on this subject. However, when Mr. Manchester put a section of dark yellow honey upon



MONUMENT MARKING SPOT WHERE STOOD OLD FORT EDWARDS

the table and I took a mouthful of it, I recognized without doubt the flavor of dandelion, not bitter, but strong, with a very positive scent of the bloom.

That evening we visited Messrs Larrabee and Holmes, apiarists living some 12 miles away. The weather was delightful and a clear full moon gave us almost as fine a light as daylight. We drove clear down to Lake Champlain, at Larrabee's Point.

The next day, I called on our old friend G. W. Fassett and afterwards on the Cranes with whom I stayed for lunch. We took a ride in one of their autos to an outapiary located at the foot of the Green Mountains, in the shade of the pines.

Mr. Crane has a very nice method of inducing the bees to finish the outer sections of a crate, at the same time preventing them from staining the sealed central sections by traveling upon them. When all but the outer rows are filled he uses under the crate a honey-board, which is closed in the center and open on both edges. This compels the bees to pass first to the open unfinished sections, which they fill more readily in consequence. Mr. Crane is the originator of the corrugated-paper shipping case in which each section is isolated. They were preparing the crop for market and had a half dozen men scraping and packing sections. They have numerous swarms, but have a great demand for bees every year from the cucumber growers, for hot houses. They get rid of their extra colonies in this manner.

Mr. Crane is foulbrood inspector. He reports great improvement in conditions over former years, but much work still remains to be done. In his opinion the movable-frame hive, with combs built crooked in the frames, is the greatest hindrance to the cleaning up of the disease. Better have box hives than frame hives with immovable frames, owing to crooked combs.

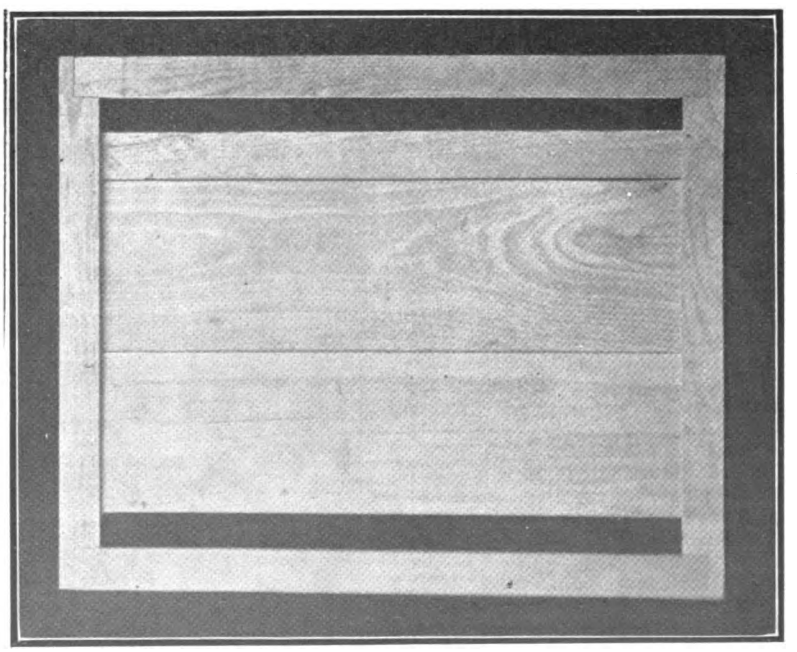
A Vermont beekeeper, Mr. C. H. Crofut, of Arlington, who was like me invited to lunch at the Crane home, quoted to me a popular rime descriptive of the things in which Vermont excels:

"Horses, maple sugar and beautiful women.
The first are fleet,
The others sweet,
And all exceeding hard to beat."

Fleet horses and pretty girls are also a claim of Kentucky. But then aren't the girls pretty everywhere? And isn't honey a product of both Vermont and Kentucky, and sweet too? In my opinion, the rime must be rewritten, including honey in the desirable products of Vermont.

I was pleasantly disappointed with the part of Vermont which I visited. I was looking for rough hillsides, stone fences and other evidences of a mountainous country. I saw beautiful fields and pretty cities. But the mountains were not far away and I am told there is plenty of rough country.

I next went back to Amherst, where I was to meet Mr. Bocock, the Englishman sent to the United States by the British Beekeepers Association to study our bee paralysis and compare it with Isle-Of-Wight disease. This will be the subject of my next letter.



MR. CRANE'S BOARD FOR FINISHING SECTIONS ON THE EDGES OF SUPERS

Shipping Full Colonies and Nuclei

BY H. D. MURRY.

A CORRESPONDENT noting my uniform success in shipping full colonies and nuclei, never having a single loss, desires that I tell through the columns of the American Bee Journal just how I "do the trick." It had never occurred to me that there was any trick about it.

The first experience I had along that line was in the latter part of January, 1906, when I shipped 18 full colonies from Jackson, Miss., to Alice, Tex., in a car of household goods. The bees were in 8-frame dovetailed hives with Hoffman self-spacing frames, the combs built from full sheets of medium brood foundation in wired frames. The entrances were the usual ⅜-inch and full width of the hive.

I had observed that in moving bees from one apiary to another, the bees have a tendency to cluster on top of the frames. As these colonies had a strong force of bees, I reasoned that it

would require considerable space above the frames to accommodate them, so I made a rim of one inch lumber two inches deep to fit the top of the hives, and covered that with wire-screen, such as is used to screen windows. On top of the wire I put a second rim of ⅜-inch stuff to hold the wire firmly in place and stop any leaks that might occur from the buckling of the wire. Before placing the screen on the hive I nailed a piece of ⅜-inch stuff lightly across the ends of the frames. When the screens were placed in position, the end piece of the screen frame rested on that ⅜-inch piece and prevented the frames from bouncing up and down while in transit. The entrances were closed with wire-cloth to give upward ventilation.

Although the weather was warm, as we have it in the South sometimes, there was no provision for watering the bees *en route*. They were on the road just ten days, traveling about 1000 miles. The weather turned quite cold about three days before they reached Alice, but had warmed up again when they arrived. Upon arrival they were moved to their permanent location and released. I did not travel with them, but left them to the tender mercies of the railroads and went through on the passenger trains. When I released them, I went through the hives to see how they had stood the journey. They were all in perfect condition and most of them had a patch of sealed brood in one or two frames. I said all were in perfect condition, but there was one colony smashed up pretty badly. Evidently it had been dropped by some brakeman or other person who had occasion to handle the shipment.

I have gone fully into details about this shipment in order to give the reader a fair chance to draw any lesson from it that it may contain. Since that time I have shipped full colonies by express to various distances, from 200 to 500 miles in winter and summer, and I have yet to lose the first colony. There is, however, this difference between shipping colonies in winter and summer: If I ship in summer, I place an empty comb filled with water in the hive, or water the bees well just before they are loaded on the car. I have also used a screen only one inch deep. If the colony is not very strong that is sufficient. The idea I have in mind is to give the bees room enough to cluster above the frames, if they desire to do so.

I have shipped 1-frame, 2-frame and 3-frame nuclei to various parts of the United States; many as far east as New York State and as far north and west as North Dakota and Minnesota. If any ever failed to reach their destination in perfect condition, the fact was never reported to me.

In packing nuclei for shipment, I have used the ordinary nucleus shipping cage as sent out by our supply houses, and a cage that I make myself, with equal success. The cage I make differs from the factory-made cage in that the ventilation is provided at both sides instead of the bottom and top as in the factory-made cage. If three or more of my cages are shipped in one parcel it is necessary to space them an inch apart for ventilation, while the factory-made cages may be crated closely together. My cage has solid bottom and top. A piece of wood with notches to accommodate the bottom-bars of frames is nailed in the bottom of the cage, about the middle.

The frames are put in place, a piece of wood ⅜x⅞ inch is laid across the frames at each end and lightly nailed. This ⅜-inch piece comes flush with the end-piece of the cage, so the cover holds it firmly in place, and it in turn holds the frames in place, preventing them from bouncing up and down. Three light nails, such as are used in nailing up frames, are driven through each end of the cover into the end-piece of the cage. Side pieces come up flush with the top of the cover and are nailed to it with about three or four nails on each side. A light rope handle is attached by nailing and stapling each end of the rope to each end of the cage. One rope is sufficient for a crate of five or six nuclei. A request, "Keep out of sun," and "Pile nothing on this hive," is stenciled on the top of one cage in each crate.

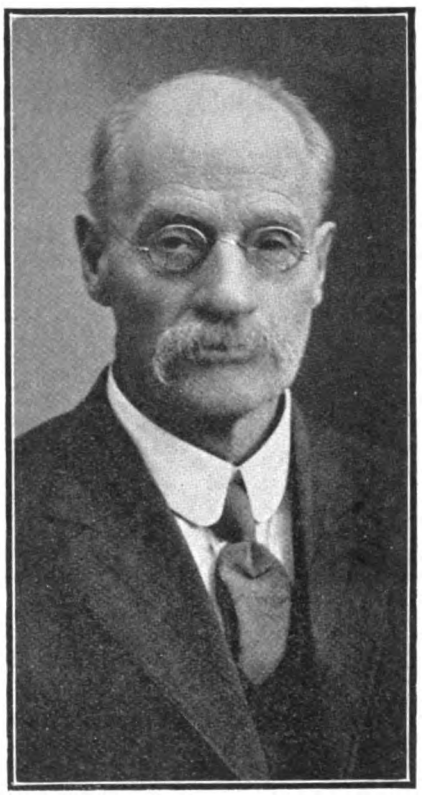
I think the kind of cage used is not very important, just so it provides ventilation for the bees, holds the frames in place, prevents the escape of the bees and is light, so as to avoid excessive transportation charges.

The important thing is what goes into the cage to form the nucleus. I take it that my customer wants a start of bees, and I put in enough bees, brood, etc., to start quite a prosperous little colony from the start. If it is only a 1-frame nucleus, I select a comb fully half filled with sealed brood, some empty cells, and enough honey to last the nucleus to its destination and some over to help in starting brood after arrival. The empty cells are filled with water, and about as many bees shaken into the cage as are sufficient to well cover both sides of a Langstroth frame or comb. This, with the brood that will soon hatch out, will make quite a prosperous little colony. In a 2 frame nucleus I place the equivalent of about 1⅓ frames of sealed brood. The other two-thirds of a comb should be about half honey and the other half filled with water. In practice, the honey will be at the tops of the frames and empty cells at the bottom, which I fill with water.

A 3 frame nucleus may contain one frame entirely filled with sealed brood which I place in the center of the cage, and the other two combs should have about an inch or an inch and a half of honey at the top, and the balance of the combs about equally divided between sealed brood and empty cells to be filled with water. Enough bees are put into all nuclei to well cover both sides of all combs. In actual practice it is not always possible to find combs with brood, honey and empty cells arranged in any certain way, so these statements must be understood to indicate the amount of those things I use rather than the arrangement of them. The amount of honey may vary with the distance the shipment is to go, always bearing in mind that my customer may be an amateur, and not know what to do with hungry bees, so enough honey is included to carry the bees to their destination and some over to enable them to recover from the shock of shipment and make their start at brood-rearing.

If a queen is to accompany a nucleus, she is caged in a provisioned three-hole cage, nine attendant bees caged with her and the cage pressed in under a comb between the bottom of the comb and the bottom-bar, wire-cloth side up, and the candy-hole against an end-bar to prevent the bees from releasing her before the shipment is delivered. Instructions are given to the customer how to let the bees release her. If, from any cause, the queen is released *en route*, there is no real damage done, but I like to have my customer able to find the queen, which he may not be able to do if she is out among the bees. Care is taken to place the cage where no water will jar out of the combs into the queen-cage.

As I have never had any failures I may not be in a position to point out the elements of success; but the points



J. E. CRANE

I regard as important are shipping nothing but sealed brood, plenty of bees, plenty of honey to carry to their destination with some left over, and plenty of ventilation, using only combs that have had brood reared in them for at least a year or two so as to make them tough, and those combs built from a good grade of foundation in wired frames.

Mathis, Tex,

The Flight of a Bee

BY J. E. CRANE.

HAVE you ever stopped to inquire how a bee flies? Why does it have four wings when a fly has only two? How can it fly backward as well as forward? Bees are governed by physical laws and are controlled by them as well as larger animal life. In these days when man has learned to navigate the air it is of special interest to inquire how the bees are able to

do so and their wonderful adaptation to their out-of-door life.

We see the need of four wings in place of two, because they can be quickly hooked together for flight, giving them a larger wing surface, for they have not only to carry themselves through the air as a fly does, but they have to carry heavy loads of nectar and pollen. When entering the hive the wings may be separated and folded in a small space so as not to interfere in their movements in the hive or in entering the cells.

Have you ever noticed the strong rib at the front of the forward wing, which appears to explain the secret of the bees flight? If the wings are united and their surface parallel with the body of the bee, we see how with wings thus spread they go through the air with little exertion. Then if the wings are turned so their surface be at right angle to the body and quickly forced backwards we can readily see how the body of the bee will be forced forward, just as a small boat is pushed forward by the oars. If the wings when spread are forced downward, or upward, or forward, the body moves in the opposite direction.

Have you ever seen a bird fly backward? Think quickly, "No!" "Yes!" There is the humming bird; have we not seen it fly to a deep-throated flower to get a sip of nectar, or perhaps a choice tit-bit of insect and then back out and rising an instant in the air to see who is watching, dart away? Evidently the flight or wing motion of these tiny birds is much like that of the bees, and so we call them *humming* birds.

Have we ever stopped to think of the number, variety and power of the muscles required to produce the varied motions of the four wings in the flight of a bee? Have we ever thought how these powerful muscles are enclosed in a little somewhat globular case, the thorax, but little more than one eighth of an inch in diameter, already occupied with the muscles required for the movement of the six legs of the bee? Have we ever thought of the rapidity of their movements? Not far from 40 miles an hour, with 500 vibrations of the wings each second it is estimated. Have we ever inquired what sustains such energy? What kind of food can they use to give them such power? We surely get a new idea of the value of honey as food when we notice what it does for the bees, how it sustains them during long flights, perhaps over hills and against a heavy wind, while carrying half of their own weight of honey and pollen. We can realize something of the muscular energy required for such flights when we see the bees drop on the alighting-board panting for air and stopping to rest before they enter their hive. Again we learn something of the exhaustion of such flights from the rapid loss of bees or the decrease in population of a hive when no young bees are emerging.

We have sometimes found the bees in a new colony to decrease from one-half to two-thirds in three weeks. This is more noticeable if honey is scarce or the bees have to fly a great distance to find it. I have many times found it a decided advantage to give such colonies, a few days after hiving, two or three combs of emerging brood that young bees might take the place of those that have worn themselves out and died.

It is interesting to note how bees are guided in their flight. Birds have tails to assist them, and boats have rudders, but bees have neither; consequently bees have to guide their flight by their wings much as a man in a row boat guides it by his oars, one a little faster or slower than the other when the direction is changed. As a result the flight of bees is not as accurate as we have sometimes thought, and a bee line is not a straight line. If we stand upon a little eminence or hill with the bees coming toward us in the late afternoon, we may see them for a long distance and observe their flight with ease. We can see how a bee flies first on one side of a straight line and then on the other. It would seem as though they set their wings as nearly as they can for a straight line, but are not quite accurate and are carried to one side; then change their flight to correct the error which carries them to the other side of the line, thus making their line full of gentle waves.

It is interesting to note the intelligence bees exercise, in flying, to save their strength. If it is windy they fly low where the vegetation or other objects obstruct the wind to some extent. Or they may keep in the shelter of a fence or a forest, although the distance to travel is farther. They have been known even to go around a hill when they knew the way rather than over it, because it was easier; their instinct teaching them how to save the hard labor of climbing the hill. Their instinct, if it is instinct, seems to serve them even better than the reasoning powers serve man, for we have found roads laid out over hills when it would have been no farther and much easier to have laid them around the hills.

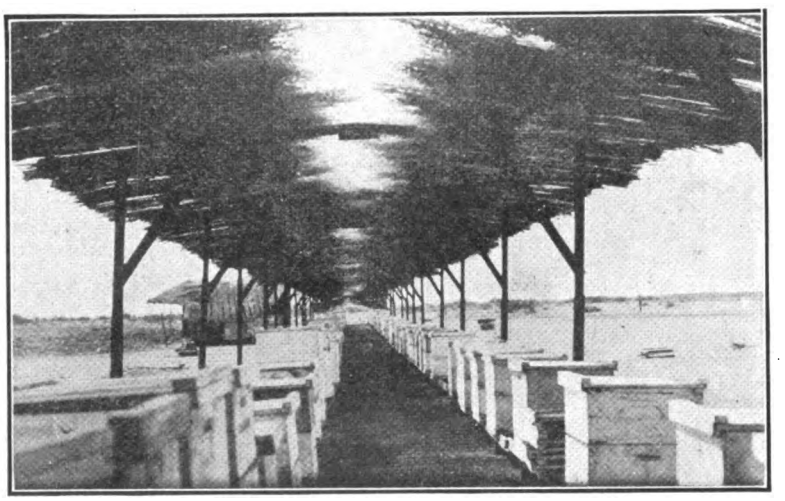
Middlebury, Vt.

Beekeeping in the Imperial Valley

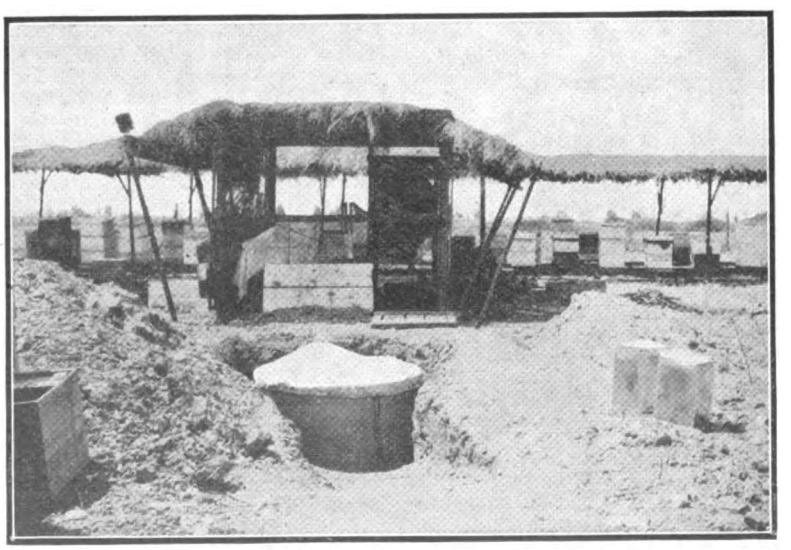
BY HOMER MATHEWSON.

IMAGINE yourself in a level country, a valley situated in southern California, about 150 miles long by 50 wide, and the greater part below the level of the sea, the lowest point being 268 feet. At some period in ages past this was a great inland sea.

In this country the annual rainfall is



NO. 1.—LOOKING DOWN THROUGH A "RAMADA"



NO. 2.—THE REAR OF THE EXTRACTING HOUSE WITH HONEY TANK IN THE EXCAVATION

less than two inches, and there are no fogs, yet there are miles and miles of water (irrigation ditches). Here the snow never falls; during the months of December and January some few frosts occur, sufficiently severe to kill most tender plants; ice on still ponds sometimes reaches a thickness of one-eighth inch.

During the months of February and March there are strong winds, corresponding to the March weather in the East. In April it grows warm and soon becomes what the cotton planters call cotton weather, *i. e.*, warm days and nights. The heat is never broken by *cold snaps*. This continues for some three months.

During August the thermometer often reaches 120 degrees in the shade, but the extremely dry atmostphere causes the sensible heat to resemble that of 90 degrees in the eastern States.

NO. 3.—CANS FILLED READY FOR SHIPMENT

In midwinter and again in midsummer one or more light local showers may be expected; during the season of 1916 no rain of importance fell from February to November.

This industry came with the early settlers, in the year 1900. Among the first were Henry Perkins, J. W. Huff and a Mr. Jones. Mr. Perkins had the honor of shipping the first car of honey from the valley. Among the successful men of today I will mention J. W. George, W. W. Fairchild, J. W. Huff, D. O. Page, M. S. Phillippe, L. Logan and F. J. Severin. These men may be styled "Men whom the bees keep."

SPRING MANAGEMENT.

The successful man has learned to prepare for the year's harvest the fall previous, by inducing late breeding, thus having a large percentage of young bees for the winter. Such management, in a measure, prevents "spring dwindling," and gives a larger number of workers to begin the harvest.

SOURCES OF HONEY.

Pollen is gathered as early as January from cottonwood and wild hollyhock. Sometimes as early as Feb. 18, some honey is gathered from the wild hollyhock. This may be called the first stimulation. It is followed by arrowwood which furnishes a fine flavored honey; many think it adds to the flavor of the early alfalfa. In some locations where willow grows it furnishes a fair flow for a limited time. The great fields of cantaloupes furnish some honey, the flow from this source lasting about a month.

About May 18, the flow from alfalfa commences and lasts through May, June and into July. The flow is slow but of long duration. Oftentimes when conditions are favorable, when nights and mornings are a bit humid, the bees simply "roll in" the honey. In normal years there is often a short flow in September. An operator is able to work but two yards, and he needs to hustle to do even this. Many of the beekeepers say that cotton furnishes honey, the long staple variety being the best. Nearly every town in the valley has its gin, and there is an oil mill. I predict that the cotton interests will increase. At present there is no boll weevil, and such perfect weather to harvest the crop.

GENERAL CONDITIONS.

The acreage of alfalfa is on the decrease, that of cotton and corn on the increase. The growing of cantaloupes has been on the increase, and from this source some honey is produced. For the past two seasons there has been a shortage of water during July and August, caused by the ditches silting up. The alfalfa is allowed to dry out and the little water available is used on cotton and corn. Many of the beekeepers complain of the cold winds in the spring retarding brood-rearing.

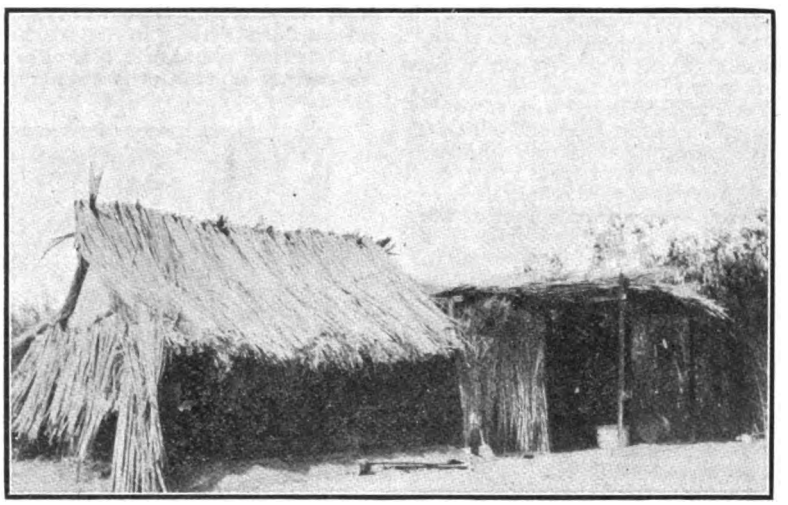
Summing up it would seem seem that the acreage of alfalfa was at least 30 percent less than formerly, that the flow from cotton and cantaloupes does not make up the deficit, and the honey crop has fallen off in the last three years from 30 to 50 percent, yet the market price has increased. The bulk of the crop is marketed in Los Angeles and other coast cities. The color of the honey is not so light as that of Nevada or Colorado. The extreme heat might be a small factor.

CROPS.

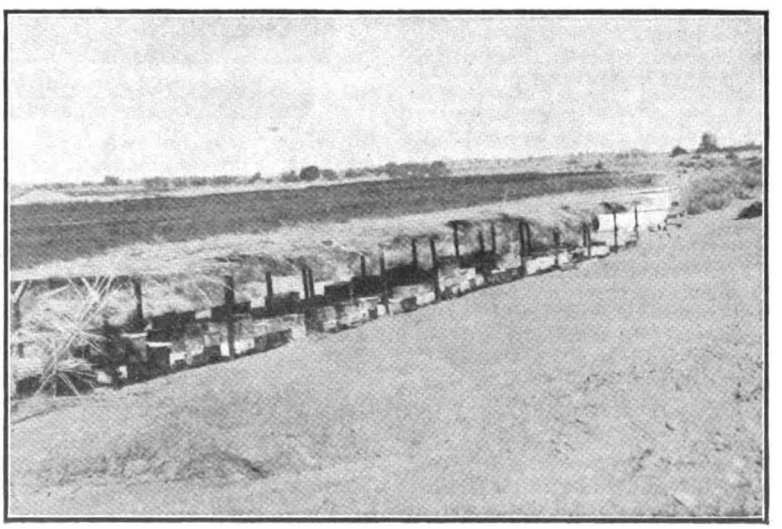
Very little comb honey is produced, and none shipped; extracted has in past years sold as low as three cents, yet this season the average is near 6½ cents. From 30 to 40 cars are shipped annually; beeswax sells around 25 cents. A foreign buyer is reported to have bought nearly all available supply in the valley.

DISEASE.

Disease has appeared, yet it is well under control, only a few apiaries hav-



NO. 4—LIVING QUARTERS OF A BEEKEEPER DURING THE HONEY SEASON



NO. 5.—VIEW OF THE APIARY FROM A DISTANCE

ing any trouble, and by the aid of the stringent law in force it is hoped that the situation may grow no worse. There are many drawbacks, drone layers, mismating, robbing, poor pasture, cranky neighbors, who make all manner of foolish demands, the person who seems to think that "God helps him who helps himself," thieves, they are well represented. I might name others, yet if a man is of the "Johnny on the spot" order, he can stand all at a small loss.

YARD EQUIPMENT.

Assuming that you have the bees, the next accessory is a *Ramada* or shade for them. It consists of a framework of wood over which wires are drawn, and then a layer of arrow-wood across with a second set of wires on top to keep the wind from blowing the covering off. The hives are arranged in rows and the operator works between the two lines. Figure 1 shows the general form of a ramada, end view. Figure 2 shows the rear of an extracting house, with honey tank sunk in the ground, with a side view of the ramada also. Figure 3 shows an extracting house, tank, a lot of filled cases and a pile of empties.

The bee-men in charge often live at the yards, and many unique structures they build. Illustration No. 4 shows a house with a sleeping room and kitchen. Some of the beekeepers in the colder States might think it somewhat limited, yet it is very comfortable. It consists of a frame work covered with mosquito netting and a cover of arrow-wood to keep the sun off. Figure 5 shows a general view of a yard from a distance. Figure 6 shows a yard where all hives are covered by two thicknesses of burlap sacks, as a protection from heat. Figure 7 shows a yard a model for neatness and arrangement, everything being in its proper place.

The prefence is given to the 10-frame size, yet a few of the 8-frame are in use.

NUMBER OF COLONIES.

It is estimated that there are more than 20,000 colonies in the valley; some think as many as 22,000. With this number of colonies and the existing conditions, the valley seems overstocked, and I would not advise any one to go there for the purpose of beekeeping without first investigating. Very soon more land will be watered, and if it is sown to alfalfa there will be a betterment of conditions.

PESTS.

Alfalfa is seriously damaged by the ravages of grasshoppers which have appeared in great numbers; another pest is the yellow alfalfa butterfly (*Eurymus eurytheme*), which is so common that the county is furnishing the farmers poison in an attempt to eradicate it. Bermuda grass is another pest. The seed comes in the irrigation water. Getting a start in the fields it overcomes the alfalfa. It gives some feed, but is not nearly so good as alfalfa.

INCREASE.

Increase is made usually by division, letting the divisions rear a queen from their own brood. Some think that the queens shipped in do not do as well at first as those of local production, a climatic condition I infer.

There are no queens bred in the valley for market. Many rear their own, and requeening is done soon after the honey flow, which may be August or September. Many think that it is not best to try to rear queens at the warmest part of the summer, claiming that the heat affects the vitality of the drones, thereby causing a great percentage of drone layers, a condition found only too often.

A large percentage of the better beemen requeen as often as every two years, and many every year. The fame of the Imperial honey has traveled far and wide, and dealers from everywhere are looking here for honey, many having orders they cannot supply.

Lexington, Ky.

Marketing Honey

BY A. F. BONNEY.

A PERSON does not have much of a show when contending with the Editor (a big E please), but the American Bee Journal has treated me fairly by printing some of my "stuff," so I shall again try to reach the public eye with something about selling our sweet product.

In the American Bee Journal for December, Mr. Pellett (page 414) suggests that "Honey is, toward glucose and all corn syrups, in the same relative position as butter is placed toward margarine. Yet butter is not neglected for margarine as honey is for glucose," meaning, of course, glucose compounds.

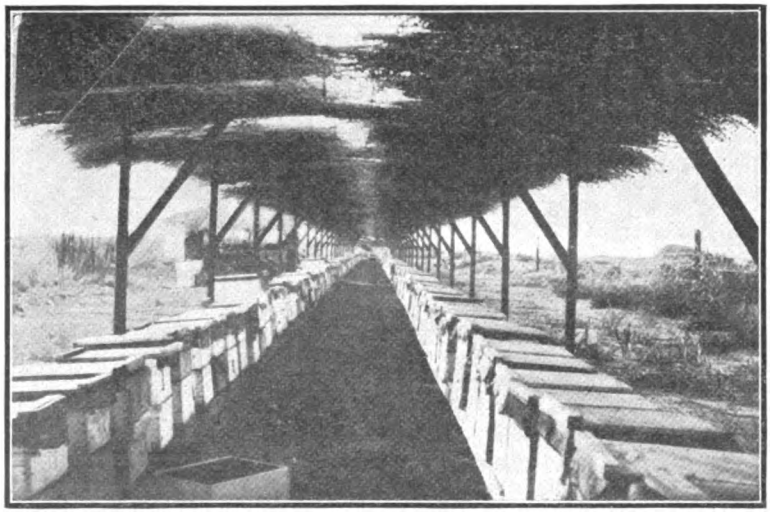
Mr. Pellett having had legal training, is a specious debater. In this case, however, while sincere and earnest, he is, I think, mistaken. Honey is not in the same relative relation to glucose compounds as butter is to oleomargarine compounds, generally called "imitation butter, butterine," etc., for there are stringent legal enactments regarding the use of oleo compounds intended for consumption as butter substitutes. There is a small tax on the sale of *uncolored* compounds, but a tax of *ten cents a pound* on the colored stuff. There is nothing of the kind regarding honey, and until the pure food laws were passed any one could adulterate honey all they chose, while laws regarding the butter imitations have been in force for a generation, I think.

Butter does come in competition with the oleo compounds, for each and every packing house makes millions of pounds of butter imitations annually, and honey will not have the protection butter has (while some of it is strong enough to protect itself) until honey producers are as numerous as farmers who send out butter in tons instead of pounds, as we, relatively, do honey. I have not the figures by me, but I know that the money value of butter in the United States runs into the hundreds of millions of dollars. The value of the honey crop will not reach $50,000,000.

Of late years "butter substitutes" are more in demand than the straight oleomargarine, which is "a granular, solid fat produced from the leaf-fat of cattle." The pure oleo was at first salted, colored, and sold to take the place of butter, but the grain, perceptible in the mouth, betrayed it, so the manufacturers soon began making a mixture of oleo, cotton seed oil and pure butter, which did away with the grain, and this imitation of butter is so good that wife and I prefer it to the uncertain butter we are able to buy in a "country" store where we should be able to get the best.

Mind this. Oleo compounds, imitation butter *is sold* to take the place of butter on the table. It looks like butter, smells like butter and tastes like butter, so much so that I defy any one to tell the "butterine" I use from good creamery butter, particularly if it be colored, and the user can color it himself with little capsules of butter color packed with the butterine.

With all due deference to the Editor, there is no such relation between honey and corn syrup compounds. These masses are mixtures of artificial glucose—made of corn starch and sulphuric acid—and cane or beet sugar syrup in the proportion of 90 percent glucose to 10 percent sugar syrup. There is so little sweet in them that a person may eat large quantities without surfeit, and I have seen children pour ounces of the stuff on a cake and eat it. There is no question in color, and the corn syrup does not take the



NO. 6.—BRAN SACKS ARE USED OVER HIVES TO PREVENT EXCESSIVE HEAT

place of honey, as honey was not generally used before glucose was discovered, as butter was used before oleo was made. Moreover, so surfeiting is pure honey that if the glucose compounds were not available, sugar syrup would be used, as it was generally when I was a boy.

I want to impress it on the minds of my readers that I am writing for honey producers, not the laity. Not one in ten thousand non-producers of honey will see this, and that is why I reiterate that while I like honey I do not want it every day. The same with maple syrup, common and cheap when I was a boy, which I tired of quickly and went back to the syrup mother used to make of "C" sugar, I think it was, a light brown and a very sweet article. My next delight was "New Orleans molasses." Gee! but it was good! Honey is so rich and sweet that it is cloying, and while it is a predigested food, or partly so, is apt to disagree with some stomachs, so that, as sellers, our last condition is worse than our first. We have lost a customer. I honestly believe that were we to advise people to mix a thick, warm syrup half and half with honey we should see largely increased sales. I have even thought of putting such a compound on the market, but there are many reasons why we should not, though while it would not *cheapen* honey it would no doubt largely increase its consumption.

Oleo compounds, "butterines," take

NO. 7.—APIARY OF F. J. SEVERIN, A MODEL OF NEATNESS

the place of pure butter on hundreds and thousands of tables, public and private, and here is something else to show Mr. Pellett's error: If a public place, even a popcorn "stand" uses oleo compounds a sign of specified size must be posted, "WE SERVE OLEOMARGARINE HERE." As corn syrup compounds compete with honey and pure sugar syrup, very common in the South, while they are a substitute for nothing, the users cannot be compelled to put on such a sign or anything similar while we may sometime be able to induce hotel men and restaurant keepers to post signs IOWA HONEY SERVED HERE, or PURE HONEY SERVED HERE. For next year's honey advertising experiment I am going to start a campaign with hotel keepers to use a card or a sign to read: BONNEY HONEY SERVED HERE. (What would the world do without BONNEY HONEY?) If others would do the same for their product it might greatly increase the consumption of our goods. BUCKWHEAT CAKES AND HONEY TODAY, would look good, while a small individual cream jug of the sweet would fill the bill.

The marketing of honey was pretty well discussed at the last Iowa Beekeepers' Association in Des Moines, and to my mind this was demonstrated: Each man must dispose of his own stock, locally, by retail if possible, or at least to the stores, and it were vastly better for him to sell at 8 cents to local trade than 7 cents to some jobber, while there is no reason on earth why 10 cents cannot be made the minimum price in Iowa for large quantities, and better prices for mail containers. One of the best things I ever hit on was a an advertisement in local papers: BRING YOUR OWN CONTAINERS AND GET BONNEY HONEY FOR 10 CENTS A POUND. One man brought in 20 quart Mason jars. He remarked: "I would have brought in a big can, but I thought I had to have the jars." He paid me $6.00, and I was ahead the price of a 60-pound can.

This, of course, calls up the question of advertising, but for small towns this is a simple matter, a sign conspicuously displayed, HONEY FOR SALE, in connection with a good label is all that is needed. When one goes to branching out it calls for more printer's ink, but if in a town of 300 to 500 and the adjacent countryside a man cannot dispose of several thousand pounds of honey at a cost of a fraction of a cent per pound for printing, there is something wrong. In most county seat papers an advertisement an inch deep by one column wide can be had at about 15 cents per week or 60 cents per month, and it would be very strange indeed if the bill could not be paid in honey. Considering the work necessary to send out cards and circulars, the newspaper is, probably, the cheapest form of advertising we can get. Addressing thousands of cards and envelopes and folding circulars is no small task. As a circular or card is read by not much more than one person, and a newspaper advertisement by one to five persons, the paper has the larger circulation. If "local" advertising is resorted to at about 5 cents a line, practically every reader of the paper will see it.

As to prices, honey producers are foolish and unwise. Actually, HONEY is the ONE THING which has NOT INCREASED IN PRICE in the past two years. This is almost unbelievable, but at our association meeting a member got up and declared that 7 cents was a fair price for honey. True, he later said 20 cents was a fair price, but the damage was done, as a reporter was present and his nimble pencil got the 7 cents. He was not present when the 20 cents was quoted. The gentleman was talking from the jobber's standpoint, as he handles large quantities of honey annually. I hope to live to see the day when white clover honey will bring more than 7 cents per pound. If I do I shall see it sold without the aid of the middleman. Sixty percent is now sold locally, according to government reports. If every one will try to sell locally, or at least without the aid of the jobber, we can average a fair price for our surplus stock.

It is claimed that the low price of honey is due to the fact that it is a "luxury." Well, ice cream is a luxury, more so really than honey, yet the people of the United States last year spent ONE and A HALF BILLION DOLLARS for ice cream. The soda fountains made it possible for one thing. While our raw material costs us nothing theirs costs dollars, yet we sell less than $40,000,000 worth of honey. Forty million dollars compared to ONE AND A HALF BILLION. How may we explain it?

One great error has been fastened onto us, owing to the fact that if comb honey is not sold by Christmas, it is apt to granulate. Honey producers have for a generation or more been urged to get rid of their crop early. It seems that producers of extracted honey are so imbued with that idea that they are in a panic to sell at any price. Mr. Root told us in Des Moines of a case this year where his firm was offered some perfectly good white clover honey at 5½ cents a pound. I refused an offer from them of 7¼ cents f. o. b. Buck Grove, but then it was Bonney honey.

Buck Grove, Iowa.

DEAR BONNEY:—I did not say that butter and oleo, and honey and corn syrup sustained the same relation in the sense that you give. What I said was that because of the organization and interest of the dairymen there are laws regulating oleomargarine, and this same agitation has made a strong prejudice against oleo. On the other hand, the beekeepers have slept quietly and allowed the corn syrup fellows to take the syrup market without acquainting the public with the superior quality of their product. I did not attempt to make any other comparison. I only tried to show that the same prejudice against glucose would have existed if the same effort had been made. If you were a lawyer instead of a doctor you

would not need a translation. However, if you get by the Editor it is all right with me. FRANK C. PELLETT.

[Evidently the misunderstanding comes from my having quoted Mr. Pellett in the manner mentioned by our old friend Dr. Bonney, for this matter on page 414 is of my own writing. As they are both good-natured in their banter, the reader will enjoy it, for the question of margarine *vs.* glucose is interesting in their relation with butter *vs.* honey.—EDITOR.]

Bees in Banks

BY BURTON N. GATES.

THERE seems to be a current of simultaneous originality among banking concerns in the use of honeybees as an advertising medium. The American Bee Journal in November, page 387, shows the window display of a Chicago bank wherein bees are used to typify those desirable saving qualities which should be cultivated by the human race. As this display attracted large crowds of interested spectators, so a similar bank window attracted thousands in Springfield, Mass., during the National Dairy Show Oct. 12 to 21. This neat display was made by the Commercial Trust Company, the material being furnished by A. H. McCarter, of Springfield.

One emphatic lesson taught is expressed on the card in the show window, "Take a lesson from the honeybee. Store up a little something each week in this bank for the future." Elsewhere in the window display were numerous home-saving safes which were linked to the general exhibit by this legend, "These little banks are to you what the honeycomb is to the bee. One dollar opens an interest account here." Another legend is, "An example for you, the bees believe in preparedness."

The bank also cordially inserted a card advising those interested in bees to visit the Massachusetts Board of Agriculture display of beekeeping materials, honey and bees, at the State Building on the Exposition grounds, where the National Dairy Show was held.

Amherst, Mass.

When to Requeen

BY F. M. PERRY.

I WOULD not requeen in proximity to the main honey flow, whether it be just before, just after, or during the flow. Before or during the flow the colonies are populous, queens are hard to find, and no colonies would have their honey production increased by bees hatching from the new queen later on.

After the honey flow is the better time, though this tends to increase the strength of colonies after the need for bees to gather is past. Besides the chances of the queen being killed in introduction are greater. The beekeeper also runs the risk of loss of some good queens during winter and before their qualities have been tested.

The foregoing applies of course to queenright colonies. Queenless colonies should be requeened as soon as found.

But the best time of all to requeen is early in the spring. Why? First, because by putting a good queen in a colony that has a poor one, or only a medium one, two months or more before the honey flow, the beekeeper gets a good force of workers, quite often double the number he would have had with the old queen, and so a larger crop of honey. Second, you still have the young queen of improved strain with which to improve your stock later, if desired; and third, you can make the introduction when the old queens are easily found, and when nearly every queen will be accepted.

Then, another thing, you can test your queen for the honey-gathering qualities of her bees, for her breeding ability, and the gentleness of her workers, within so short a time that you can be sure that any defect that may show is in the queen herself.

A large amount of honey goes ungathered every year, because the poorest colony is not as strong as the best. Why not have them all best? It is an old saying among beemen, that the colony that gives the big yield this year will not do much next year. Why? Is it not because the queen has done so well that the bees do not see the need of superseding her at the end of the honey flow? It is not the number of bees you have in the apiary, but the number you have in each colony that counts when you come to the main honey flow. Bradentown, Fla.

CONVENTION PROCEEDINGS

Queen-Rearing for Northern Latitudes

The results of a very interesting series of experiments in queen-rearing at the the University at Madison, Wis., was reported in a paper read by Mr. C. W. Aeppler, at the Wisconsin meeting. Mr. Aeppler is specializing in bee-culture at the University, and had charge of the queen rearing last summer.

In the North the same methods of queen-rearing as in the South will not apply owing to the climate. The nights and even the days are cool up to June 15, and even later. Mr. Aeppler found that the Doolittle method of having cells built was not so successful for him in early spring as the Alley or Dr. Miller methods.

CHOOSING THE CELL-BUILDERS.

Not all colonies are equally as valuable as cell-builders. Out of 50 colonies only six proved good cell builders. Of these, two were especially valuable for the proportion of cells built. Both of these had queens of the previous August, and both were reared from the same mother. His conclusions were that the cell-building colonies should be carefully chosen from colonies having young and vigorous queens. This would also minimize the attempts at swarming of such colonies.

MANAGEMENT OF CELL BUILDERS.

The colonies chosen were stimulated both by feeding and by the addition of sealed brood to get them as strong as possible. When ready to have cells built, all of the sealed brood and most of the bees were placed in an upper story with a queen-excluder between. Between the upper and lower stories was also placed an escape-board, partly of screen wire, with the escape opposite to the usual method, so that the bees could go above, but none go back. The object of the screen is to give the bees above as much warmth as possible, while Mr. Aeppler finds that with the escape placed as indicated, he gets a few young bees to go upward and help strengthen the colony.

The entrance of the cell-building upper story is a one-inch hole on the back side of the hive. This allows the old bees to return at once to the old front entrance, leaving only young bees in the cell builder. The small entrance also helps retain the warmth and prevents robbing. Mr. Aeppler stated that often the bees would cluster all over the back of the hive during cell building.

Both stories were fed stimulatively when necessary, with an Alexander feeder, and more sealed brood was continually added to the cell builder as the season advanced. Cells were readily accepted in any kind of weather.

THE CELL CUPS.

Experiments were made with different sized artificial cell-cups, and on a large number of colonies. Cells seven-sixteenths of an inch in diameter and three-fourths to one inch in length were the most readily accepted and most promptly capped. This is the cell-cup size before being given to the bees for 15 or 20 minutes for polishing before inserting the royal jelly and eggs.

COVERS FOR CELL BUILDERS.

The hive cover for all cell-building colonies is made in sections so that the frame of cells may be placed or removed with as little disturbance to the colony as possible.

Cells are left in the cell builder for about 24 hours, when they are placed in other colonies for finishing.

NUCLEI.

No success was had with baby nuclei. Mr. Aeppler now uses regular 10-frame hives partitioned off to make three nuclei with entrances on different sides of the hive. Thirteen to 20 cells are given to each colony. At least 90 percent of the cells given are accepted.

We quote an interesting passage verbatim, concerning the greater or less readiness of bees and other beings for rearing their young:

"The number and value of the queen-cells that can be secured by the beekeeper depends entirely upon the cell builders. This is the writer's conclusion after two years of experimenting on this particular point. We have all

noticed that some mares will nurse a colt better than others; that some cows treat a calf kindly and will nurse it, whereas its own mother will not; that a certain brood sow can nurse 12 pigs better than another will nurse six. It is a question of individuality and behavior. We have the same conditions present in queen-rearing. Not all colonies are cell-builders. One will accept a batch of 20 cells and complete them all; another may not accept ten. It is up to the beekeeper and queen-breeder to determine to some extent at least which colonies it will pay him to use as cell builders, the same as it pays the breeder of swine to determine which shall be his brood sows and and which shall go to market.

"It is a business sense that prompts such action. We must specialize in order to succeed best. It is quite as easy to start 100 cells and have 90 completed as it is to have only 25 completed. As it takes time to make the wax cell-cups, secure royal jelly, and graft larvæ, one should endeavor to get maximum results. To use the words of David Rankin, 'Make every seed, every second, and every cent count.'"

The Missouri Meeting at Columbia

During the year 1916, the editor attended 17 different beekeepers' meetings, besides declining a half dozen invitations, which it was utterly impossible for him to accept. He resolved to retrench for 1917. But so urgent a letter was written him by Dr. L. Haseman, Entomologist at the University of Missouri, that he broke his resolve Jan. 3, and went to Columbia.

This was Farmers' Week at the Missouri University, and some 1500 farmers had availed themselves of the opportunity to get information. The train on which the Editor reached Columbia, after 7:00 p.m., was carrying about 300 visitors. He was promptly informed that the hotels were all full, as well as the boarding houses, and that the only chance for a bed was through the efforts of the Business Club, who was directing the stranded visitors to the homes of hospitable citizens. Our Editor appears to be a lucky man, for he is always properly cared for. This time, he was given a room in the fine home of the mayor of the city, Mr. J. M. Batterton. If the hospitality he enjoyed is a sample of Missouri hospitality, that State must be put in the front rank for kindness to strangers. Reader, did you ever stop to think how many good people there are in the world, if you could only know them? The acquaintance made during this visit will not be readily forgotten.

The meeting of beekeepers was attended by only 30 to 35 persons, mostly beginners. But it was splendidly conducted by the president, E. E. Tyler, assisted by Dr. L. Haseman, Entomologist, and Messrs. A. H. Hollinger, Thos. Talbert, K. C. Sullivan and Harold Fort. Our old acquaintances, R. A. Holekamp, J. F. Diemer, Gladish, Sr., Nebel, and other experienced apiarists were in attendance.

A splendid exhibit of the "evolution of the beehive" was furnished by the managers. From the old straw skep, through the "gum," the first patented hives, the original Langstroth, the Heddon, Danzenbaker, Jumbo and latest dovetailed hive, most of the modern changes were represented. A hive of bees, under a screen cage, gave opportunity for demonstrations each day. Fine honey was also shown. A very much magnified section of a worker-bee, showing all the internal organs, gave Dr. Haseman great help in his descriptions of the anatomy of the honeybee.

The spraying of fruit trees in connection with the possible poisoning of honeybees was treated by Dr. T. J. Talbert. A short synopsis of this valuable essay will be inserted in our April number. Mr. Talbert's conclusions are that if spraying is done at the proper time and with the proper mixture, there is no danger whatever for the bees.

An address by Miss Louise Stanley, instructor in Household Science, on "Uses of Honey on the Farm," urged strongly the substitution of honey for sugar in many things. Miss Stanley quoted mainly from the Farmers' Bulletin No. 653 of the United States Department of Agriculture, which may be had at Washington, D. C., upon request.

A most interesting essay, by a very interesting man was "Why Some Beekeepers Fail," by H. B. Parks, Biologist at Palmer College, Albany, Mo. Mr. Parks promised us a synopsis of his essay for publication.

It is out of the question to speak of all the interesting matters discussed at this meeting. The beekeepers of Missouri are to be congratulated in having such lively interest taken by the Entomological Department of their State, and they should give this work their hearty support, by attending the meetings of the Association.

On the last evening of Farmers' Week a banquet of 900 covers was given, in which the department of beekeeping had furnished honey for every table. At that banquet, the greatest need of Missouri, good roads, was emphatically discussed. The world is moving in the right direction.

BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

Foulbrood Experiences of a Beginner

I will tell of my experience with the little busy bees, as they have been so interesting and given me so many, many hours of pleasure; but if it had not been for our State apiarist, Prof. F. Eric Millen, my beekeeping would have been of short duration.

For several years I had wanted bees on account of the fruit; but spring after spring would pass, and still I would not have bees. Finally there appeared this advertisement in our town paper last April: "For Sale—Eight good healthy swarms of bees." I bought the bees and all the old beekeeper's paraphernalia. In a few days I learned that the bees were diseased, but the party giving the information would give no more, not even the State apiarist's name, but "closed up like a clam." I am glad he did, and I am glad I ran into this trouble at the start.

I wrote, addressing the letter to the State Inspector of Apiaries, Lansing. By return mail came a letter from Prof. Millen, saying he would be in my locality and would call in a few days, which he did, and after examining each colony said they had foulbrood, but thought, by treating, they could be saved. This he did June 10, and such a transformation in a couple of hours. They were shaken from the old hives, some of which dated back 25 years, into new double-walled hives all neatly painted, and on painted stands. A bonfire soon consumed the old hives, brood-frames, and all the old paraphernalia. Prof. Millen reduced them to six colonies, and clipped the queens wings.

The neighbors, learning that I was interested in bees, would telephone if they found a swarm, and so the season ended with 14 colonies.

On Sept. 15, Prof. Millen again examined the colonies and introduced Italian queens. At that time he advised extra feeding, which was given. The chaff trays were put on early in November; they are being wintered outdoors without any further protection, other than being in a secluded spot with buildings to the north, and buildings and a high closed fence to the west.

On Jan. 27, they were as active as on a day in the fall, and what greatly interested me was to see the little yellow bees around each entrance, which I hope proves that all queens are alive.

A. S.

In the Eucalyptus Country

I am sending a sample of eucalyptus honey, which is just as pure as you will get, I believe. The forest is about 500 feet from the hives. It commenced to bloom in November, and was the only thing in bloom when the bees began to work, which was Jan. 3, 1916.

I am enclosing two views of my places after the box-hive time. I bought 24 8-frame hives, and found the colonies swarmed when the hives were full, so I tried 10-frame hives and supers. Now I put all the ten frames for brood-nests with all the shallow frames above early, then the 8-frame bodies later, as it is easier to lift them. I have added queen-excluders and blocks under the hives. I try to keep to 25 colonies, and bless Dr. Miller for the paper uniting plan. By blocking a part of the entrance and taking off the full and half supers they are ready for our winters.

[MRS.] LUCY SEXTON.

Goleta, Calif.

Thanks, Mrs. Sexton, for the liberal samples of eucalyptus honey. It is indeed interesting to sample various honeys from different sections of the country. Each sample has a different taste, some mild and some strong.

This honey is amber, of excellent

body, well ripened even to stringiness, with a flavor that can be described only as eucalyptus flavor, which of course means nothing to one who has never tasted it. Those who prefer honies of light color are not likely to approve of it; those who like the darker honies may. In Australia, the home of the eucalyptus, the flavor is highly esteemed, and Australian beekeepers cannot understand why eucalyptus honey does not class with the best in London, where they have been anxious to establish a market for it. Some years ago a leading beekeeper of Australia brought to our place samples of several different kinds of eucalyptus honey, which varied no little. This California sample would probably rank with the best of the Australian.

Those are fine views. With everything in northern Illinois covered with snow, and the thermometer for days playing about the zero point, it takes some imagination to fancy one's self sitting under those palms. The other picture awakens awe at the grandeur of the sight, and it would be fine to be there to work with the bees, but to live there the year around would seem a rather lonely thing, for it doesn't look as if neighbors were very plenty.

You are right in liking the newspaper plan of uniting. It is so effective, so successful, and so little trouble. Just put a sheet of common newpaper over the top-bars of one hive, set the other hive over that, and you may trust the bees to do their own uniting; first gnawing a very small hole through the paper, and uniting so gradually that there is no fighting. You can put all the brood of both stories into one story in three or four days, taking away the paper, but if you forget them for two weeks or more it will not matter. They will tear the paper all out and carry it outdoors. One thing that is no small advantage is that after the imprisonment in the upper story, the bees will not return to the old stand as they would if not thus imprisoned.

MISCELLANEOUS NEWS ITEMS

Government Bulletin on North Carolina Beekeeping.—"A Survey of Beekeeping in North Carolina," is the title of a 16-page government bulletin written by E. G. Carr, of New Jersey, who made a survey of conditions in that State from Oct. 1 to Dec. 22, 1915 under Dr. Phillips' Bureau of Bee Investigations at Washington. Unfortunately Mr. Carr's survey covered only a portion of the State.

North Carolina ranks fourth among the States for number of colonies with a total by the census of 189,178 colonies. She ranks eleventh in value of beeproducts ($230,586). A large proportion of the bees are German or black bees, and are kept in log hives or gums, which are either placed on log benches or flat rocks. Most gums are kept in thick shade for fear of melting combs, much of which could be averted by better ventilation.

Swarming is uncontrolled generally, resulting in reduced crops, and in much loss from wax-moths which have a longer season in which to exterminate many of the weaker colonies of black bees.

Fortunately, foulbrood (American only) is found in only a few counties, and to a limited extent. Its ravages in box-hives, unexamined, might be tremendous. Sacbrood and paralysis are also found, though to what extent is not known since very few beekeepers have movable-comb hives, and an examination of colonies is infrequent.

Winter protection for bees is practically unknown, although it might be practiced to advantage. The crops average probably from 40 to 80 pounds per colony, depending upon the season and on the kind of honey secured. Comb, extracted, bulk comb, chunk and "strained" honey are produced. Beeswax is rendered from box-hives, but only in a crude way, a large proportion of the wax being lost. There are three commercial queen-breeders in the State.

The honey-flora of North Carolina is abundant, some of the main producers being sourwood, linden, poplar, the clovers, gallberry, black and tupelo gum, etc. Honeydew is also abundant occasionally.

In summing up the situation Mr. Carr says:

"North Carolina has a large number of bees. The pollen and nectar producing flora are abundant, and the honey, when properly produced, is high grade. There is a good market in the State for honey, and many more bees could be profitably kept. The beekeepers of North Carolina are now in proper attitude to accept and make the best use of information which will enable them to secure good profits from bees."

Copies of this booklet may be obtained by addressing a request for Bulletin No. 489, United States Department of Agriculture, Washington, D. C.

Minnesota Inspector's Report.—The 1916 report of the State Inspector of Apiaries for Minnesota is just out. Interested parties may get copies by addressing the inspector, Mr. D. C. Blaker, 4420 Grimes Ave., Minneapolis

A total of 8519 colonies were examined by the inspector or his deputies. Of these 360 colonies were found infected and ordered treated. Mr. Blaker has a very efficient system of records by loose leaf cards, which aids in checking the spread of disease.

Through cooperation with the Division of Bee Culture at the Agricultural College, efforts are being made to permanently keep free from disease apiaries within reach of the University Farm beekeeping region.

Food for the Child.—"The Rural School Lunch" is the title of a 24-page bulletin gotten out by the Domestic Science Department of the University of Illinois. The booklet contains much of interest to the parents of school children.

One item, mentioning honey, is worthy of notice. It is as follows: "When we understand what is essential and vital for the growth and health of a child, it yet remains for us to know what foods will furnish these essentials."

"If an average boy were offered his choice between a lunch of bread and honey or one of bread and milk, he would, without doubt, choose the former—there is no question but the former would more completely supply the complex demands of a growing boy or girl."

Accident Insurance for Beekeepers.—The Société Romande d'Apiulture, in Switzerland, supplies its members with a monthly magazine, a library of books on bees, lectures, meetings, and an insurance against accidents. Here is what one of its members had to say, in the November, 1916, "Bulletin" concerning losses:

This season, I undertook the transportation of my bees to the mountain. Along the road, an accident happened; four hives were upset and opened. The driver was stung to such extent that he was incapacitated for a week, and his horses were stung so severely that one of them died within 24 hours and the other was hardly well after two months. It had cost $240 before the accident, and sold for only $160 afterwards.

The Winthertour Insurance Company having a contract with our association, paid the damages, $380 for the lost horse and for decrease of value of the other; $102 for treatment of the other saved horse, repairs of harness, carriage, loss of time, etc., a total of $482.

This incident is a sufficient evidence of the usefulness of our association, to which we must remain faithful. It was my fourth year of bee transportation and the second year with the same drayman. We might have said: Nothing ever happens. But something did happen this time. J. TALLANT,

Swiss Bulletin D'Apiculture.

Honey on the Farm.—A recent bulletin of the United States Department of Agriculture is devoted to an analysis

of food consumed on the farm, how much per family and per person, and how much of this food is produced at home, how much purchased.

The survey covered a total of 950 families in 14 different States. The States were Vermont, Maine, New York, Pennsylvania, New Jersey, North Carolina, Georgia, Texas, Ohio, Iowa, Wisconsin, Kansas, North Dakota and California.

The four leading States in consumption per capita were North Dakota 3.2 pounds, Texas 2.8 pounds, New York 2.7 pounds, and Wisconsin 2 pounds. Those consuming the least were Vermont with .2 pound, New Jersey .3 pound, Pennsylvania .4 pound, and California .7 pound.

About 57 percent of the honey used on these farms was home produced, the balance was bought.

If these figures argue for anything,

MRS. SEXTON'S APIARY IN CALIFORNIA

it is for the development of home markets by the average beekeeper. We have been, for years, expecting the big cities to use our surplus honey, when in fact many of us might profitably have exerted more effort in seeing that our farmer friends had enough honey to supply them. A little over three pounds as the annual consumption of a person is little enough, especially when compared to 80 pounds and more of sugar. Can we not quadruple this consumption by well directed efforts?

A Peculiar Accident.—The Nucla Independent (Colorado) records in one of its recent numbers a very sad and peculiar accident causing the death of Mr. F. W. Huntley, a large and well known beekeeper of that section.

Mr. Huntley was accompanying several loads of honey to the railroad station of his nearest town. While going up a steep hill, both teams broke loose from their load, the wagon backing down and over Mr. Huntley, who was in the rear of the loaded wagon. Death was instantaneous.

Southern Minnesota Meeting.—The annual convention of the Southeastern Minnesota and Western Wisconsin Beekeepers' Association will be held at Winona, Minn., in the Court House on Feb. 27 and 28.

O. S. HOLLAND, *Sec.*

Pennsylvania Convention.—The annual meeting of the Pennsylvania State Beekeepers' Association will be held in the Capitol Building, Harrisburg, March 2 and 3. An interesting program is in preparation.

H. C. KLINGER, *Sec.-Treas.*

The National Meeting.—The annual meeting of the National Beekeepers' Association will be held at the State Capitol at Madison, Wis., on Feb. 6, 7, and 8. The address of welcome is to be given by N. E. France, for many years General Manager of the association.

The following men have been invited to address the meeting, and a large majority of them will be in attendance:

Dr. C. C. Miller, Dr. E. F. Phillips, E. R. Root, C. P. Dadant, Morley Pettit, Dr. S. A. Jones, Geo. W. Williams, Dr. L. C. Leonard, Dr. W. M. Copenhaver, Frank C. Pellett, Prof. F. Eric Millen, E. D. Townsend, Wesley Foster, E. S. Miller, Hamlin B. Miller, Louis H. Scholl, J. D. Bixby, E. J. Baxter, Rev. Francis Jager.

The topics which will be touched upon by the speakers are such as are of especial importance to the beekeeping fraternity, and are such subjects as will have to be taken up by the National to make it of most value. They are as follows:

State and government aid for beekeeping industry.
Educational, research, and extension work.
Production and overproduction of honey.
Comb and extracted honey.
National bee census.
State fairs and exhibits.
Honey and commerce.
Competitors and enemies of honey industry.
Standards of grading, packing, shipping, and others.
Advertising and increasing consumption of honey.
Containers.
Freight and express, imports and exports.
Honey statistics, quotations, distribution of reports.
Supply and demand, the "bear" and "bull" in the honey market.
Efficient protective system for American beekeepers.
Necessity of a National central office.
Plans and policies to make the National a powerful agency for success.

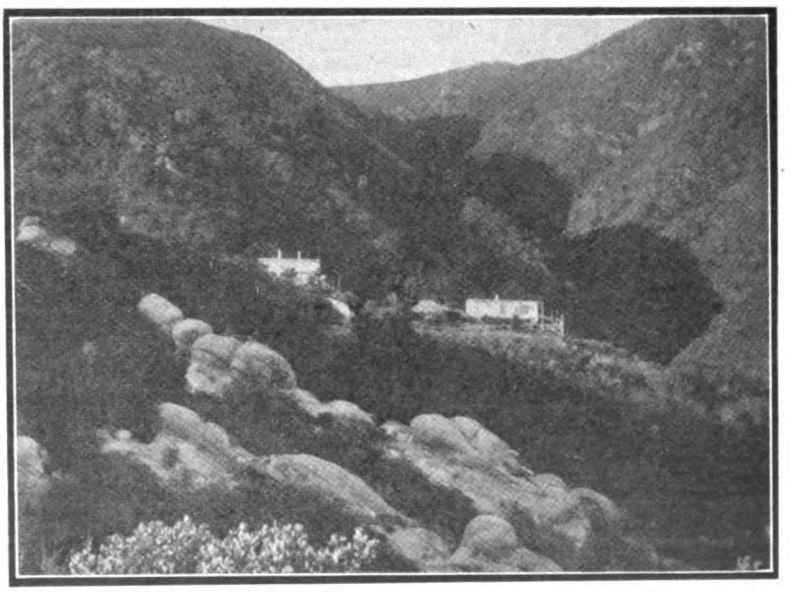
A BETTER COMBINATION

When one neighbor raises flowers,
And another chickens,
Oft they fight like irate powers,
Daily raise the dickens.

Neighbors ought to strive to please,
Folks should not be scrappy.
Better make it flowers and bees
And be truly happy.

—*Louisville Journal.*

California Meeting.—California's State Beekeepers' Association will meet in the Exposition Hall of the State Exposition Park in Los Angeles Feb. 16 and 17. There should be a large attendance



DISTANT VIEW OF A BEE RANCH IN SAN MARCOS PASS, SANTA BARBARA, CALIF.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to DR. C. C. MILLER, MARENGO, ILL. He does NOT answer bee-keeping questions by mail.

Keeping Down Swarming and Getting a Good Crop

What do you think of this plan for getting extracted honey and keeping down swarming? We will suppose that we have the hives well shaded and plenty of ventilation and well supplied with supers, but once in a while one will swarm. Now suppose you remove the hive and all surplus supers to one side and hive the swarm in a new hive with frames of foundation except one that would contain a little brood and eggs; this frame would be taken from the hive that swarmed.

Now set this new swarm on the old stand, then place a queen-excluder on the hive, then put all of the supers back on the hive, then shake all of the bees that were left in the old hive in front of this new hive and let them go in; then place the old hive containing the brood on top of all the supers, and in seven or eight days look to see if any queen-cells are started; if there is cut them out and keep right on putting on supers until the honey flow is over; then in the fall of the year double all the swarms up by putting one hive on top of the other. When they are all united take the top hive off and see that the hive left to the bees has plenty of honey for winter. I have had to winter my bees outdoors which I do not like, as I have never been very successful.

MINNESOTA.

ANSWER.—Your story reads all straight until you say to cut out any cells that may be found seven or eight days after swarming. You should have cut out cells on the day of swarming, and then for the next cutting I'd rather wait eight or nine days more.

You say, "Then in the fall of the year double up all the swarms by putting one hive on top of the other." That sounds a little as if you meant to unite two different colonies. I hardly think you mean that, but merely to set over the lower story that at the time of swarming was put above with brood in it. But in the fall there will be no brood in it. Within three weeks after swarming all the worker-brood will have emerged, and in the fall it will be a story filled with honey, provided the flow is good.

Your plan on the whole is excellent, and has been used a good deal.

Giving Queen Room for Early Laying

I have six colonies of bees in 10-frame hives. I fed them late last fall just as much as they would store away in their combs. I am wintering them in a cellar, but before I put them into the cellar I weighed them and they weighed from 65 to 75 pounds each. Will the queen have enough room in early spring to lay? MINNESOTA.

ANSWER.—There is very little danger that the queen will not have enough room, but if there should be any trouble in that way just take out one of the outer frames of honey and put in its place an empty comb, placing it outside the brood-nest, but next to the brood.

Feeding a Weak Colony in the Winter

Last fall I got two colonies of bees. They were robbed and left weak. How is the best way to feed them so they will go through the winter all right? I do not have any comb honey but have some extracted.

NEBRASKA.

ANSWER.—You can lay sections on top of the top-bars, cover over with cloths, and leave the bees to themselves. You can feed the extracted honey. Put it in friction-top honey pails having a lot of holes punched through the covers with a wire-nail. Have the honey as hot as your finger will bear, but be sure not to scorch it. It will be better to have more than one pail, so that the bees will not be long in carrying the honey all down. Just set the pails upside down on the frames, and then cover up with cloths. It may be worth while to warm up the cellar to 50 or 60 degrees. If you are not sure that the honey is free from disease, you can feed sugar syrup in the pails. Heat the water, and while it is on the stove sprinkle the sugar into it, keeping it stirred until well dissolved. For each part of water, either pint or pound, use 2 or 2½ parts of sugar. Use granulated sugar.

Increasing—Requeening

1. How early would you advise me to start increase as I want the colony to build up strong before fall?
2. Would you advise rearing queens from brood or buying queens? I have some good stock.
3. If I buy should I buy virgins, untested or tested queens?
4. If the queen is clipped and a swarm comes out is it necessary to settle them or will they return to the new hive which has been placed on the old stand?
5. If I start queen cells in a strong colony (made queenless), then give the cells to a 1-frame nucleus would they finish them all right? KENTUCKY.

ANSWERS.—1. One of the surest ways to spoil your chances for good increase is to divide your colonies too early. A point of chief importance is to have colonies first build up strong, and even then better not do any increasing before about the time for natural swarming, or at least a little before that.

2. That depends. If you want to keep down expenses, don't feel in a hurry, rear your own queens. If you care more for increase than for the expense, buy queens from farther south, unless you can get them early enough nearer.

3. Like enough untested may be advisable.

4. They will return of themselves, although sometimes a swarm will cluster on a tree and remain some time before going back to the hive.

5. Yes; but you better leave the cells as long as you can safely in the strong colony. You can leave them safely in the strong colony until ten days after taking away the queen, provided no queen-cells were started before the queen was taken away.

Sour Honey

I had some dark honey gathered this fall from buckwheat, aster, and some other wild flowers and it was quite thick. After extracting I put it into 10-pound pails. One of these pails fermented and soured. What was the cause? There was no water or moisture in the pail, and the honey was kept in a warm place after extracting.

MINNESOTA.

ANSWER.—Without knowing more about the case I could not speak positively, but my guess would be that the honey was not well enough ripened, and so began to sour.

Believe My Bees Were Poisoned By Spraying

My bees were wintered in a cellar in 1½ and 2 story hives. On May 1 the bees were very strong with plenty of stores We had no bee disease. I have my bees in a large orchard, and by the time the spraying was done, June 10, my bees were so depleted that they were killing and dragging out the drones. They built up afterwards; no colonies were lost.

The trees were not sprayed while in bloom, but there was a heavy underbloom of dandelion, and at the last spraying there was much white clover in bloom; there were 3 sprayings. The workers seemed to go to the field and fail to get back. I got the same dose in 1911, but in 1915 there was little under-bloom and the loss of bees was not noticed.

The brood looked healthy, and not many dead bees in front of the hives other than drone larvæ and drones. IOWA.

ANSWER.—It looks pretty certain that the bees were poisoned by the spray that fell on the dandelion and clover. In States where there is a law against spraying trees while in bloom, there seems nothing to reach the case, and there is nothing for the beekeeper but to grin and bear it. The only law that would be of use would be one forbidding all spraying at any time, and such a law would do more harm than good.

Getting Swarms from Bee-Trees—Baiting for Swarms

1. In May and June there are a number of runaway swarms that go flying across the country. How can I capture them or induce them to settle?
2. Often they have taken up their abode in some hollow tree. How could I use a bee-escape to capture them, letting them escape into a tight box, taking the box home and giving them a queen?
3. How can I put up a box in the woods and let them hunt it up and go into it of their own accord? KANSAS.

ANSWERS.—1. If you get ahead of them and throw a heavy spray of water upon them you may possibly get them to settle. Some say use a mirror and throw the reflection of the sun upon them. Others say shoot small shot or sand from a shot gun into them.

2. There is no great difficulty in getting all the workers that fly afield by having an escape through which they can pass, with all other exits closed, but the trouble is to get the queen and the younger bees, which are quite satisfied to remain. Possibly you may drive them out by throwing in enough smoke, carbolic acid, or something of the kind. If you can get them out in that way without any escape, then you can quickly close up all chance for them to return.

3. The usual way is put the hive in the crotch of a tree, but it may do as well placed on the ground. One or more empty brood-combs may help, but the moth is likely to get them if they stay long.

Kind of Sections—Artificial Shade

1. Are untested queens fertilized?
2. Which sections are the best to use, plain or beeway?
3. What is the best plan for shade if you have no trees? MISSOURI.

ANSWERS.—1. Yes. If unfertilized they are sold as virgins.

2. Personally I prefer the beeway, and I think the great majority agree with me.

3. Vines may be quickly grown. You may have a shade-roof of shingles or any cheap material, allowing it to project on the south side, weighted down with stones. A satisfactory way is to take an armful of hay or straw—better long grass freshly cut—and pile it on top of the hive, weighting it down with two or three billets of firewood.

Honey and Sugar Compared

1. A man who owns a large number of bees gave up a piece of ground he had been renting and accidentally left a few hives on the place. A new beekeeper rented the ground and put his bees on the place. He found the boxes left there by the former beekeeper and cleaned them out and set them in a pile.

A few days later a swarm of bees was found in the boxes. The renter took care of the bees and built them up. Some time later he casually let drop a remark to the former renter, telling him of his boxes and that he could have them as soon as the bees were transferred. The former renter claimed both the bees and the boxes. To whom do the bees legally belong?

2 How sweet is honey? Some say it is twice as sweet as sugar. Is this not a mistake? MINNESOTA.

ANSWERS.—1. I am not a lawyer, but I'll tell you how the thing looks to me. Call the first renter A, and the second B. If A had taken away all his hives when he left the place, and B had caught the swarm in his own hive, there would hardly be any question as to B being the owner of the swarm. The only difference in the actual case is that A's hive was used for a time, and A might claim rent for the hive during the time the swarm was in it. Also B might claim rent for the ground occupied by A's hives.

2. I have made considerable effort to learn just how honey compares with sugar as to sweetness, but never succeeded. Something was given in that direction by the authorities at Washington, D. C., but if I remember correctly it was not definite. But I think a pound of honey will do no more sweetening than a pound of sugar, if as much.

Miscellaneous

1. Would it not be a good thing for the National Beekeepers' Association to have a warehouse where beekeepers could send their product, such as honey, beeswax, etc., to be sold. Also where they could buy supplies say about 5 percent above cost? The warehouse should be centrally located near water and railroad, so as to reduce the cost of sending.

2. How much do bee papers pay for a word or line for articles?

3. When sending bees from the South to the North in early spring, say about April 1, why not get a comb of pollen and put it in a strong colony? There are train loads of pollen going to waste every spring in the foothills in northern California. OBSERVER.

ANSWERS.—1. Yes, something of this kind has been discussed many times, but nothing has ever come of it. Possibly something may yet.

2. I don't know; generally, I think, they have more than they can publish without paying anything, but some writers are paid at varying prices

3. Apparently you think the lack of pollen in the North is responsible for the lack of bees. There's plenty of pollen here.

Wintering in a Dry Cellar

1. I wish to winter my bees in the cellar, which is very dry, and holds temperature from 40 to 45 degrees. Do you advise removing the covers and raising the hives in front of those that are on shallow bottom-boards?

2. The cellar is large, but the part I want to put them in is 10x15 feet. How many can I put in that space for best results?

3 One of my colonies cast a swarm and a virgin queen accompanied the swarm along with the old queen. Was that unusual? ILLINOIS.

ANSWERS.—1. If you raise the hives in front it will be hardly necessary to remove the covers.

2. If the air in the cellar is not changed too slowly, 125 to 150 colonies ought to do well in it. Instead of having the temperature 40 to 45 degrees, it would be better to have it 40 to 50 degrees.

3. Yes, it is quite unusual.

Stamping Section Boxes

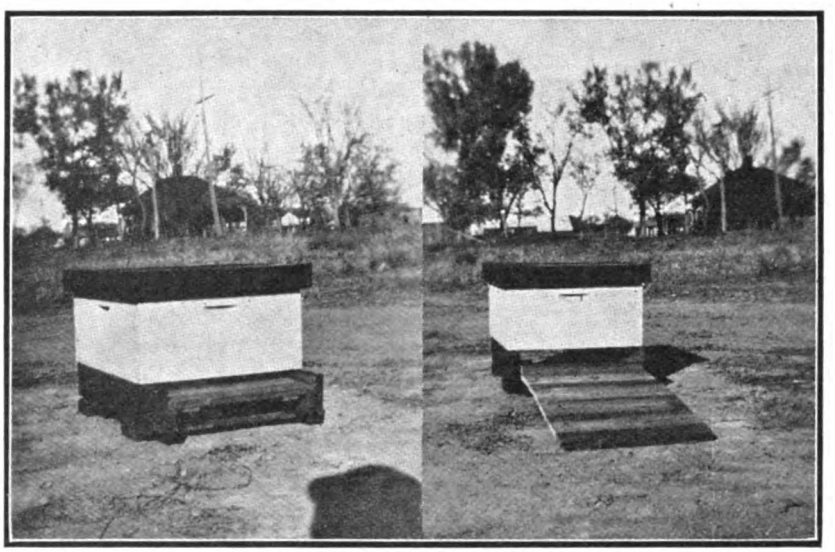
Do you know a way of printing honey section boxes without the stamping-ink running together? ILLINOIS.

ANSWER.—Any good stamping-ink or printing-ink ought to work all right. It requires a little practice not to have your stamp too wet with ink nor too dry. When you strike your stamp upon the ink-pad, if it is too wet with ink, have a piece of cloth upon which to strike your stamp once or more so there will not be enough ink on the section to run together. Then you may be able to stamp several sections before the impression upon the section is too faint, when you must strike your stamp again upon the pad. A good deal depends upon having the ink-pad just wet enough. If you have it just right, neither too much nor too little ink upon it, you may be able to work straight along striking pad and section alternately.

New Hive Stand and Bottom-Board

Attached are photographs of a hive stand and bottom-board combined I would like to have you pass judgment on it. The left hand hive shows the hive on the stand with bottom-board in place.

The hive on the right shown is on its stand



A COMBINATION BOTTOM-BOARD WHICH CAN BE SLID TO THE FRONT

with bottom-board drawn out, which makes it easy to clean. It slides in grooves on the hive stand, and when in place it is bee tight at the back, but by sliding it back a little it will give ventilation when needed. KANSAS.

ANSWER.—Beekeepers are an inventive lot, and many a one invents something that he likes, and yet other beekeepers do not care for. I am a little afraid your invention is one of that sort. If you leave the movable board drawn out in harvest, the bees will build down. Drawing it out makes it convenient, as you say, for cleaning, but you can have that advantage more easily and cheaply by following the plan more in use in Europe than in this country, which is to slip in a piece of pasteboard or roofing paper.

Cellar Wintering

I have been having trouble with cellar wintering. My cellar is about 15 feet square, cemented on the bottom and sides. I have a coal stove in a small room adjoining with a 6-inch thimble opening into the bee-room for ventilation upward, also three 3 inch tin conductor tubes coming through the walls and extending nearly to the floor on two sides of the room.

Two years ago I had about 60 hives in this cellar with the front ends of the hives raised two or three inches by an entrance block. I had no fire and left all ventilators open. I lost 13 or 14 colonies.

A year ago I had about the same number and left them out in order to let them get a late flight, but the weather turned quite cold and I had to take them in without the flight. The hives were full of frost so I raised the front ends of one-half of the hives, and the duck-cloth on the front ends of the rest. I kept a coal fire a while to dry out the frost, and in the coldest weather when the thermometer went down near 40 degrees in the room. They seemed to be doing well until about the middle of the winter, when they began coming out and dropping on the floor and dying. I lost 24 colonies last year and the remainder were about one-half strong and the rest quite weak.

What was the trouble? A good many of the combs were moldy, and some of the colonies seemed to have diarrhea and others not. The room is banked up as high as the walls with straw about a foot thick. I think putting them in with frost in the hives is responsible for some of the trouble, but not all.

This year they had a good flight on Dec. 9, and were carried in two days later in good condition. I now have only 47 left. I have not raised any hives or duck covering yet, and would be glad to have you advise me. Do you think the 6-inch outlet in the chimney about three feet below the ceiling was too large or the 3-inch intake pipes too many? I kept one and sometimes two closed in the coldest weather with a coal fire burning slowly in the back room and the door open between. NEW YORK.

ANSWER.—Without any fire, the likelihood is that your cellar was too cold two years ago. A year ago you say you took them in after they had endured more or less confinement without a fly, and no doubt their intestines were somewhat distended when taken in, and that was worse than if they had been confined in the cellar for a longer time. The moldiness of the combs seems to indicate lack of ventilation, and your closing part of the ventilation in the coldest weather may have made matters worse.

You seem to have made a good start for this winter, and I would advise that you keep up abundant ventilation, both of the hives and the cellar, and then try to keep the temperature up to about 50 degrees. There is, however, a good deal of variation in thermometers, and you should try to find out whether your thermometer marks 50 degrees when the temperature is really only 40 or 45.

Transferring—Extracted Honey—Number of Colonies in United States, Etc.

1. In transferring bees from box-hives to movable-frame hives, it is explained in the Bee Primer that you must lift the body from the bottom board and set it upside down and then place the forcing box on the hive, etc. Now suppose your box-hive has the bottom nailed to the hive-body, so you can't invert it. Could I not take the cove

off of the box-hive and place the forcing-box on top of the hive instead of on the bottom and then pound the hive, and would the bees not cluster in the forcing-box just the same?

2. In working for extracted honey is it best to put a super with combs in on the hive as soon as the bees begin to bring in pollen in the spring, or is it better to wait until the flow is on and they have stored some in the brood chamber? Will the queen lay brood in these frames if put on early? If she starts to lay in them in the spring will she lay in them all summer?

3. Last fall when I had extracted I put the combs back on to be cleaned, but there was still a little honey coming in from the fields so they stored a little in the frames (not enough to cap). Will they work in these in the spring as well as in empty ones?

4. If the queen lays eggs and brood hatches in extracting combs and then the bees store honey in them afterwards, will this honey, when extracted, be darker than that from combs in which no brood has been reared? Will there be any difference in the quality (taste)? How can the queen be prevented from laying in the supers without an excluder?

5. If honey is extracted about the middle of July will it keep until the last of September in open tanks or barrels? The thermometer sometimes reaches 100 degrees and over in July and August. How long will good honey keep in bottles or jars? Will it granulate when bottled?

6. About how many colonies of bees are there in the United States? In Nebraska?

7. Early in the spring before there is any field work for the bees, if you feed the bees small amounts daily, will the queen begin laying?

8. Please explain the best method of uniting two weak colonies. Would the two store more honey united than separate? Would they be liable to swarm?

9. In wintering bees I have read one should make a frame of screen to lay on the frames and then the mat or other absorber on top of this so the bees can move freely, from one frame to the other. Can't they move just as well from the bottom? How do they get from one frame to the other if the mat or absorber is laid directly on the frames?

10.—In requeening should the old queen be killed before the new one is introduced?

11. Is there any way to make a home-made bee-escape that is cheap and practical? Should the bee-escape be put on the day before the super is to be taken off or can you get the bees out of the super the same day?

12 Is there enough honey produced in the United States to supply the demand or is there place for more beekeepers?

NEBRASKA.

ANSWERS.—1. Generally a box-hive has the top nailed on and the bottom not nailed; hence the instruction to invert. If the top can be lifted off, then there is no need to invert, whether the bottom be tight or loose.

2. It is not best to put the extracting-super on before it is needed, as it makes just so much more room to be kept warm when all the heat is needed below to keep the brood warm. The queen is likely to lay in the second story, and to continue it. However, if the brood-chamber be small, it may be a desirable thing to have the queen lay in the second story at least until the harvest.

3. The bees will work just as well—possibly better—with some honey in the extracting-combs, but that honey that is left over winter in the combs is pretty certain to be candied, and to hasten granulation in the honey that is freshly stored.

4. It is generally considered that honey stored in combs which have been used for brood-rearing is just as good as any in color and taste; but some think there is a little difference. It is a difficult thing to prevent the queen from laying in the upper story without using an excluder, although I think she is less likely to go up if the extracting-combs be shallow. Perhaps Editor Dadant will tell us about that. I think E. D. Townsend keeps the queen down by having full combs of honey in the story next the brood-chamber, adding additional stories above this story instead of under.

5. There is a big difference in honey as to the tendency to granulation. Some will granulate within a week or two, while some will keep liquid a year. I should expect that your honey, if thoroughly ripened, might remain liquid until the last of September; yet it might not. Bottled honey may keep good 10 years or more, but will generally granulate unless heated to above 130 degrees and sealed.

6. The 1910 census gives about 35,000,000 colonies for the United States, and 46,000 colonies for Nebraska. This counts only bees on frames and does not list those in cities.

7. Yes, if you were in a place where there was an utter dearth of bee-pasturage, with warm weather, you could get the queen to lay by feeding. In your region you probably cannot make a day's difference in the time she begins.

8. Very early in the season you can generally unite by merely lifting the combs with adhering bees out of one hive and setting them in the other. At other times put a sheet of newspaper over the top bars of one hive and set the other hive over it. The bees will tear away the paper and unite of their own accord, and in four or five days you can move the occupied combs from the one story into the other. The united colony may store more and it may store less than the two separate colonies—depends upon whether they are too weak to be built up for the harvest. The united colony will be more likely to swarm than one of equal strength not united.

9. No; in cold weather they can move from one to another over the top, where it is warm, more readily than under the bottom, where it is cold. If a mat is laid flat upon the top-bars, a little stick, or something of the kind should be under the mat to afford a passage under it.

10. Yes; although the new queen may be caged in the hive a day or more before the old one is killed.

11, Possibly you might make a cone-escape with wire-cloth. Generally you will not get the bees all out before the next day. [Page 108, June, 1915, J. E. Crane gave the description of a home made bee-escape, cheap and practical. A solid honey-board is placed under the super and the bees come out at the end of this board in the manner shown in the illustration.—EDITOR.]

12. The demand is so little that many beekeepers feel they do not get enough for their honey. Yet it would be for the good of the nation if ten times as much honey were consumed as is now produced, and if the people were sufficiently informed as to the value of honey, that amount might easily be consumed.

Queen-Excluder—Hybrid Bees—Salt for Bees—Basswood Trees—Honey-House—Bee-Cellar

1. I purchased ten wood and wire queen-excluders, and as my bees are all of the black strain the queens go through. I will need some more bees. Would you advise me to get the same kind or what would you do?

2. Could you tell me of a good reliable place to buy queeens without paying too big a price?

3. How long does it take a man to get immune to bee-stings, being stung two or three times daily, and when immune will it last from fall until spring?

4. Would it pay to run an outyard with only 20 or 25 colonies at home and about that many at the outyard? I have an auto and can find a good location about three or four miles from home.

5. A neighbor beekeeper tells me that a hybrid bee is more cross than a pure Italian or a pure black. Is this so?

6. Will it injure honey to let it stand in a galvanized tank? If so, what can be done with it?

7. Would taking whisky be any help to a person when real sick from bee stings?

8. What is the reason bees work so much on salt? Would it pay to leave salt some place for them?

9. How many basswood trees for each colony would you want before you would consider it a fairly good place for an outyard with white clover on the side?

10. What does it cost to join the Beekeepers' Association, and who do you see about it?

11. If I build a honey house with a cellar under it for my bees, would carpenter work in this house bother the bees in winter?

IOWA.

ANSWERS.—1. If the queen-excluders are all right, neither black nor Italian queens should go through. Other things being equal I suppose the wires are preferable to the stamped zinc, but I surely wouldn't want those that would let queens through.

2 I must refer you to the advertising columns of the Bee Journal. I think any of those advertising will furnish good queens, and you can compare prices yourself.

3. I don't know very definitely, but I suppose that in such a case a man might become immune to a good extent in two or three months, and I think the immunity should last through the winter. But if you mean by "immune" that a bee-sting doesn't hurt at all, then I think there are very few that ever become really immune. I have been at it for more than 50 years, and a bee-sting hurts me like sixty now. But the hurt doesn't last very long, and it swells very little.

4. That depends on the location. It would be a very poor location that would not support 40 colonies. If the location is fairly good it will hardly be advisable to start an outapiary until you have more than 75 or 100 colonies.

5. It is very often so.

6. I hardly think it will do any harm for the few days it should remain in the tank before being put in permanent containers.

7. It would likely do more harm than good.

8. I don't know, but I suppose the salt supplies some need, and as they seem to care for it it might be well to give it to them.

9. I don't know. I have seen it estimated that one tree was enough for a colony, but I don't know how correct that is.

10. If you cannot join through some local association near home, you can join directly by sending $1.50 to the secretary, Prof. F. Eric Millen, Ames, Iowa.

11. With only a single-board floor over the cellar and with much heavy pounding, I should be afraid of results. With a double floor and something to act as a deadener a little pounding would hardly do much harm.

ARCHDEKIN'S FINE ITALIAN BEES AND COMBLESS BEES

April, May, June queens warranted purely mated, $1.00 each; six for $5.00; per doz., $9.00. Bees per lb., $1 25. With untested queen, $2.00 per lb. I have originated a pkg. light but strong; saves you bees and express. My guarantee is prompt shipment, safe arrival, perfect satisfaction. No disease. Small deposit books your order.

J. F. Archdekin Bordelonville, La.

POULTRY, FRUIT, BEE PAPER COMBINATION $1.50

Poultry and Fruit are allied pursuits for the beekeeper. Here is a special combination of three papers which gives excellent reading at a low cost:

The Fruit Grower..... .50
American Poultry Advocate..... .50
American Bee Journal..... $1.00

Our price for all three for one year is only $1.50. Or if you want two poultry papers, add 25c to the above offer and get your choice of the following one year:

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AMERICAN BEE JOURNAL, Hamilton, Ill

Classified Department

(Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS.

PHELPS' Golden Italian Queens will please you.

THREE-BANDED ITALIAN bees and queens Send for our 1917 calendar—it's free.
A. E. Crandall & Son, Berlin, Conn.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

PLACE your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens. John W. Pharr,
Berclair, Tex.

PHELPS' Golden Italian Bees are hustlers

VIGOROUS prolific Italian queens, $1.00; 6, $5.00. My circular gives best methods of introducing. A. V. Small,
2302 Agency Road, St. Joseph, Mo.

FOR SALE—7500 pounds of bees in combless packages, starting April 1, 1917. Better write us before it is too late to have your order booked. Marchant Bros.,
Union Springs, Ala.

A LITTLE AD in our classified columns will sell that perfectly good equipment that you no longer need. Only 15 cents per line each insertion.

MY BRIGHT Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

BEES FOR SALE—1000 lbs. in 1-lb. packages at $1.00 per lb. Untested Italian queens, 70c extra, to be shipped April 1 to 20. All orders must be in by April 1.
T. W. Burleson, Waxahachie, Tex.

FOR SALE—Bright Italian queens at 75c each; $7.50 per doz. Ready April 15. Safe arrival and satisfaction guaranteed.
T. J. Talley, Rt. 3, Greenville, Ala.

BUSINESS First Queens descriptive price list tells all about them and my $10 free offer. Tested queens ready now. Order early.
M. F. Perry, Bradentown, Fla.

GRAY CAUCASIANS, exceptionally vigorous and a long lived race of bees; are known as the most gentle of all bees. Free circular and price list. Orders booked now for spring delivery. F. L Barber. Lowville, N. Y.

FOR SALE—2-fr. nuclei 3-band Italians with queen, $2.25; 1-lb. bees with queen, $1.65. Hoffman frames wire and foundation at catalog prices. J. B. Marshall & Son,
Rosedale Apiaries, Big Bend, La.

LEATHER colored 3-band Italian bees, $1.25 per pound. Tested queens, $1.00; untested, 75c each; 2-fr. nuclei, $2.00; extra combs, 15c each. Delivery after April 15.
C. H. Cobb, Belleville, Ark.

GOLDEN and 3 banded Italians; also Carniolan queens. Tested, $1.00; untested, 75c each. For bees and nuclei write for prices. Discount on large orders. C. B. Bankston,
Buffalo, Leon Co., Tex.

GOLDEN ITALINAN QUEENS bred strictly for business, that produce a strong race of bees as honey gatherers By April 1, untested, 75c each; 6 for $4.25; 12, $8.00; 100, $60. Tested, $1.50. Safe arrival, prompt delivery and satisfaction guaranteed.
L. J. Dunn, 50 Broadway Ave., San Jose, Cal.

BEES FOR SALE—A number of well established apiaries in Frio, Bexar and Atascosa, Texas, in the mesquite and guajillo belt have been listed with us for sale on their present sites. Can also furnish bees in car lots.
Southwestern Bee Co., San Antonio, Tex.

FOR SALE—Apiary of bees at Tularosa, N. Mex.; up-to-date appliances, good bees, good bee location, and fine climate to live in. Selling because of death of late owner, J. A DeWitt. N. B. DeWitt,
Care El Paso & S. W. Ry., Douglas, Ariz.

MY BRIGHT Italian queens will be ready to ship April 1 at 75c each; virgin queens, 30c each. Send for price list of queens. Bees by the pound. Safe arrival and satisfaction guarranteed. W. W. Talley,
Rt. 4, Greenville, Ala.

YEAR old Italian queens, $6.00 a doz. Bees by the pound April and May delivery. Good bees, queens, service, and satisfaction always. Write for prices at once.
S. Mason, Hatch, New Mex.

QUEENS, Doolittle and Moore strain, also GOLDENS that are GOLDEN. One select unt. $1.00; 6, $4.25; 12, $8.00. Tested, $1.25.
Bees by the pound a specialty. One 1-lb. package, $1.25; one 2 lb., $2.25; large lots less, also nuclei and colonies. Ready March 15th. Booking orders now. Circular free.
J. E. Wing, 155 Schiele Ave., San Jose, Calif.

PHELPS' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y.

TELL several thousand people what you have for sale with a few words in this department.

GOLDEN QUEENS that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00; Breeders, $5.00 and $10.00.
2Atf J. B. Brockwell, Barnetts, Va.

GOLDEN Italian queens of the quality you need. Bred strictly to produce Golden bees that get the honey. Satisfaction guaranteed Untested, one, 75c; dozen, $8.25; 50, $32.50; 100, $60 Delivery after March 25. Bees by the pound nuclei or full colony.
L. J. Pfeiffer, Motor Rt. A, Los Gatos, Calif.

FOR SALE—Three-band Italian bees and queens. Three-frame nuclei with this year's rearing queen, $3.00; without queen, $2.75. Three pounds of bees, $3.25. Young queens, 75c each. Our bees and queens last year gave general satisfaction, and this year we are in position to give stronger nuclei with a greater percent of brood than we did last year. If it is a bargain you are looking for send your order this way. Send your orders now and money when you want them shipped. Can begin shipping April 15. Bees are all in standard hives, Hoffman frames wired and full sheets of foundation. We guarantee bees to be free from disease. The following is an extract from one of our many satisfied customers: "Today, Aug. 16, I hived the second large swarm from the colony I started from a 3-frame nucleus I bought from you in June, and have about 40 pounds of surplus honey in hive." It pays to keep well bred stock whether it is cattle or bees. Name furnished on application.
The Hyde Bee Co., Floresville, Tex.

HONEY AND BEESWAX

WANTED—Honey in any lots from any point. The Honey King, Mahnomen, Minn.

FOR SALE—Fancy and No. 1 comb honey.
W. L. Ritter, Genoa, Ill.

WANTED—Comb, extracted honey, and beeswax. R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

WANTED—Beeswax at all times in any quantity, for cash or in exchange for supplies. Dadant & Sons, Hamilton, Ill.

I NEED a large supply of extracted honey, must be white clover or its equal. 60-pound packages preferred. Quote your lowest cash price f. o. b. here. Send sample if you are interested. F. Bender,
221 Pub. Square, Nashville, Tenn.

WANTED—Extracted honey in both light and amber grades. Kindly send sample, tell how your honey is put up, and quote your lowest cash price, f. o. b. Preston.
M. V. Facey, Preston, Minn.

No. 1 white comb, $3.50 per case; No. 2, $3.00. No. 1 fall comb, $3.00; No. 2, $2.50; 24 sections to case. In six case lots 10 percent discount. H. G. Quirin, Bellevue, Ohio.

WANTED — White extracted honey also light amber in any quantity. Send sample and lowest cash price.
E. B. Rosa, Monroe, Wis.

WANTED—Wax and old combs for cash or to make up on shares. "Best quality" foundation made and sold cheap in small lots.
J. J. Angus, Grand Haven, Mich.

COMB HONEY our specialty. Highest market prices obtained. Consignments of Extracted Honey also solicited.
Albert Hurt & Co., New Orleans, La.

WANTED—Extracted white clover and light amber honey. Will buy in lots of 1000 pounds to a carload. I pay cash. State what you have and send sample with lowest price. Write. M. E. Eggers, Rt. 1, Eau Claire, Wis.

WANTED—Well ripened white extracted honey, preferably alfalfa and sweet clover or white clover. Send sample and price to
The Colorado Honey Producers' Association
1424 Market St., Denver, Colo.

SPECIAL offer of "The Domestic Beekeeper" six months for 25c worth of stamps. Send it today. Address "The Domestic Beekeeper" Northstar, Michigan.

HONEY WANTED—We are in the market for white and light amber grades of honey, also off grades which are suitable for baking. If you have such honey to offer, please send us sample, state the quantity you have, how packed and your lowest price for same.
Dadant & Sons, Hamilton, Ill.

SUPPLIES.

WANTED—Cheap honey extractor in good order. J D. Sherwood, Rt. Madison, Iowa.

THE PERFECT Bee Frame Lifter. For descriptive circular address,
Ferd C. Ross, Box 104, Onawa, Iowa.

How to double your honey production at a small cost. Send 2c stamp for information. W. M. Budlong, 1523 14th Ave., Rockford, Ill.

FOR SALE—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

BEE-KEEPER, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
4Atf Paris, Tex.

GOOD second-hand 60-lb. cans, 2 cans to the case, 30c per case, in lots of 10 cases or less. In lots of 25 cases or more, 25c per case. These prices are f. o. b. Cincinnati.
C H. W. Weber & Co.,
2146-48 Central Ave., Cincinnati, Ohio.

WANTED—We often have inquiries for old bee books and Bee Journals, and will be glad to buy and sell these for our patrons. Let us know if we can do something for you along this line. Address,
American Bee Journal, Hamilton, Ill.

FOR SALE—50 new 10-frame hives with metal covers complete with frames nailed and wired at $1.75 each; in lots of 25 or more at $1.50 each; also 50 10-frame supers nailed and wired; hive and supers painted two coats at 60c each; for the supers in lots of 25 or more, 50c each. M. C. Silsbee Co.,
P. O. Cohocton, R.F.D. 3, Haskinsville, N. Y.

"DAD" Townsend and his two sons are simply honey producers, the same as most of you are, nothing more. The boys produce the honey and "Dad" will tell you how they do it from month to month in "The Domestic Beekeeper." Send 25c in stamps and read "The Domestic Beekeeper" the first half of 1917 and see how the crop is produced. Address, "The Domestic Beekeeper," Northstar, Michigan.

SITUATIONS.

WORK wanted in apiary in southwest States; some experience as beekeeper.
Mrs. O. A. Peterson, Rt. 8, Owatonna, Minn.

WANTED—Beekeeper familiar with Rocky Mountain conditions to handle bees on shares. Can make good offer. Write stating age, experience, etc.
A. H. Dunn, Fort Collins, Colo.

WANTED—Man of more or less experience to help in comb and extracted honey production in northern Illinois. Address,
Bruner's Bees,
3836 N. Kostner Ave., Chicago, Ill.

THE 25C OFFER for the "Domestic Beekeeper" for the first half of 1917 is for *new* subscribers *only* as a trial subscription. Old subscribers willingly pay the regular price, which is a dollar a year. Send in the 25c in stamps at once before you forget it. Address "The Domestic Beekeeper," Northstar, Michigan.

WANTED—A good bee-man for 1917; also an assistant. Must be reliable men. State wages, and give references.
W. J. Stahmann, Clint, El Paso Co., Tex.

WANTED—Queen-breeder to take up proposition to supply our members with queens. Location and equipment furnished. About 3000 queens used in 1916.
Idaho-Oregon Honey Producers' Ass'n.,
New Plymouth, Idaho.

WANTED—Reliable farm raised man of good habits, who has had some experience with bees, as helper with bees, etc., season 1917. Large apiaries. Steady employment to right party. Give age, experience and wages wanted first letter.
Frank Kittinger, Franksville, Wis.

WANTED—A position in a large apiary. Understand both comb and extracted honey productions, and can assist in queen rearing, as I understand the business. Would prefer position in the southern States. Address,
J. R., Care of American Bee Journal,
Hamilton, Ill.

ARE YOU a member of the National Beekeepers' Association? If not, *you should be*. The dues are $1.50 each year, which includes a year's subscription to the official organ of "The Domestic Beekeeper," "Dad" Townsend, the owner and publisher of "The Domestic Beekeeper," has secured more members (ask the secretary) for the *National* than any one else, and perhaps as many as all others combined, and want to add another thousand members this winter. Will you be the next? We hope so, for it is with great pleasure that we are able to send in a nice list of members each week. Mail the $1.50 today. "The Domestic Beekeeper," Northstar, Michigan.

HONEY LABELS

HONEY LABELS of the better sort. Not only the most attractive but also the lowest in price. Send today for free samples.
Liberty Pub. Co., Sta. D, Box 4H, Cleveland, O.

MISCELLANEOUS

25 LADIES' COATS, bird dogs, wild ducks for sale or exchange for bees.
A. J. Graves, Ocheyedan, Iowa.

50 ACRES of bottom land in central Oklahoma for trade or sale. Fine location for apiary. Close to oil wells.
L. Benson, Gillette, Wyo.

MARKET prices paid for junk, rags, burlap, carpet, rubber, rope, paper, books, copper, brass, all metals, scrap iron, raw furs in large or small lots. Send for list.
Chas. G. Bolton, Zieglerville, Pa.

THE very best bargain you can get for 25c worth of stamps is "The Domestic Beekeeper" for the first half of 1917. Address "The Domestic Beekeeper" (successor to the Review) Northstar, Michigan.

WANTED

QUEEN EXCLUDERS wanted for 10-frame hives.
Otto Bender,
Rt. 10, Jefferson Barracks, Mo.

TRADE—Safety writing desk, $75 rifle for bees. A. J. Graves, Ocheyedan, Iowa.

WANTED—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses.
Dadant & Sons, Hamilton, Ill.

WANTED—Bees to run on shares by experienced man. Am familiar with conditions in the western States. Address,
E. Zion, Goldroad, Ariz.

WILL exchange $48 incubator for reversible extractor, or pay cash. Write
Lorenzo Clarke, Winona, Minn.

WANTED—To exchange six Vols. History of the World for bee-books.
E. E. Nelson, Rt. 2, Renville, Minn.

WANTED—Four frame hand-power automatic extractor; ball-bearing, slip-gear, comb pockets 12 inches. Must be guaranteed. W. F. Byers, Monroe, Iowa.

THERE will be big things doing this year along the line of establishing a uniform selling price for honey, both at retail and at wholesale. "The Domestic Beekeeper" will be headquarters for information upon this subject. Send 25c in stamps for six months' subscription to the "Domestic Beekeeper," and keep posted on the most important subject confronting the honey producer today. Do it now. Address "The Domestic Beekeeper," Northstar, Michigan.

POULTRY

WHITE and buff Wyandotte and dark Cornish eggs for hatching from heavy laying and prize winning stock. Get my catalog; "it's free." Am booking orders now.
Joseph Cox, Valencia, Pa.

LUCERNE LAWNS LEGHORNS LAY—Because they are bred that way. Large, thrifty, vigorous, farm range raised Single Comb White Leghorns will fill your egg baskets in the winter when your bees are resting and eggs are high. Safe delivery and fertility guaranteed. References any bank or banker in Platt county. Get a start with fifteen eggs prepaid any address in United States, $3.25.
Lucerne Lawns Farm, Paul D. Cooper,
Rural Route 3, Hammond, Illinois.

FOR SALE

FOR SALE—200 comb-honey supers, standard eight and ten frame size, painted, 50 and 40 cents. Write Chester Kelster,
Rt. 1, Clarno, Wis.

QUEENS ON APPROVAL—A select tested queen on approval. Send address for description etc. Bees and supplies for sale.
A. M. Applegate, Reynoldsville, Pa.

FOR SALE—Well established retail honey business in one of the largest industrial centers of the world. Reason for selling is my apiaries are too far away to work to advantage, so I wish to move near the bees and devote all my time to them. A rare opportunity for a live man with a little capital. Established 1910. John C. Bull,
811 So. Hohman St., Hammond, Indiana.
Phone 1023 J.

BEGINNING with the January number the name of the Review was changed to "The Domestic Beekeeper" and greatly enlarged, there now being 48 pages and cover; the pages being an inch larger each way. Listen, we want every reader of the American Bee Journal to see what a fine monthly we are now putting out, and we are going to offer a special bargain of six months' subscription to "The Domestic Beekeeper" for the first half of 1917 for the small sum of 25c. Just drop 25c worth of one or two cent stamps in a letter and write your name plainly and mail to "The Domestic Beekeeper," Northstar, Mich., and "The Domestic Beekeeper" will come to you regularly for six months.

SWEET CLOVER SEED—We have on hand several hundred pounds of hulled white sweet clover seed which has weed seeds mixed with it.
While the percentage of weed seeds is not large, this seed would not do for field sowing. It is, however, quite suitable for roadside planting or for sowing in waste places. Special price in lots of 10 pounds or more at a time, 10c per pound.
We also have some of the yellow and white biennial seed mixed. This will do very well for sowing for bees in waste places. Price in lots of 10 pounds or more 12c per pound. Dadant & Sons, Hamilton, Ill.

Queens and Bees from the Cotton Belt Apiaries

Three-banded Italians only. We are now booking orders for April, May, and June deliveries at the following prices, viz:

PRICES FOR ONE OR MORE

	1	6	12
Untested	$ .75	$4.00	$ 7.50
Tested	1.00	5.70	10.75
Breeders	3.00 to $10.00 each.		
Virgins	3 for $1.00.		

	1	10
1-pound package, wire cage, without queen	$1.50	$1.25
2-pound package, wire cage, without queen	2.25	2.00

1 frame nuclei without queen, $1.50; 2-frame nuclei without queen, $2.75; 3-frame nuclei without queen, $3.50.

When queens are wanted with nuclei or packages add queens at prices quoted above. Write for discount on larger quantities booked early.

We guarantee safe delivery of bees and queens, and reasonable satisfaction. Twenty years experience. No disease. Health certificate with every shipment. Write for testimonials and references if desired.

To avoid disappointment in the spring be sure and place your order NOW.

The COTTON BELT APIARIES, Box 83, Roxton, Tex.

FOREHAND'S QUEENS

15 LBS. SURPLUS ☜ ***Which Colony is Yours, Mr. Beekeeper?*** ☞ **150 LBS. SURPLUS**

How many of you were disappointed last season when you harvested your honey crop? You can make every colony a good one. WHY NOT? Just head it with a young vigorous three-banded Italian queen. She will cost you only 75 cents, just three pounds of honey. You can easily make a gain of sixty pounds over the inferior colony, which is a net gain of $3.75. Good pay for introducing one queen, not considering the increased value of the colony. Spring will soon be here, the time to requeen that colony that has the bad queen. Can you spend your time more profitably now than deciding what stock and where to purchase your early queens? Give us a trial. We breed only the pure three-band queens. All our yards are pure, so you take no risk in getting a hybrid. Four reasons why you should use our queens: 1st. They are first-class honey gatherers. 2d. They are vigorous and highly resistant to foulbrood. 3d. The imported bees (which ours are reared from) are among the gentlest bees known. 4th. The most modern and learned bee-men in the world today use the three-band. WHY? Because they are the best.

We have had over 25 years' experience in rearing queens; having started with Doolittle and such men. We have 1000 nuclei, which makes it possible to fill orders promptly. Three expert queen-breeders have charge of these nuclei; so we do not over-work, which gives us ample time to improve our stock. None but first-class queens are mailed. We give a first-class queen at a medium price, and we guarantee perfect satisfaction and safe delivery.

Untested	$ .75	$ 4.25	$ 8.00	Tested	$1.50	$ 8.75	$17.00
Select untested	1.00	4.75	9.00	Select tested	2.00	11.00	20.00

Write for circular giving general description. Mail all orders to

W. J. FOREHAND & SONS, Ft. Deposit, Ala.

Honey Wanted

If you have any white or amber honey to dispose of, write us sending sample at once. Also state how honey is packed and price you ask for the same.

DADANT & SONS
Hamilton, Illinois

Write for price list and booklet descriptive of our

HIGH GRADE ITALIAN QUEENS

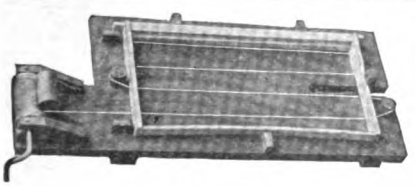
And Bees by the Pound

JAY SMITH
1159 DeWolfe St.
Vincennes, Indiana

FILMS DEVELOPED

All roll films developed for 10 cents. We return them the same day. Everything in the KODAK Line. Send for catalog.

F. M. ALEXANDER
Atlantic, Iowa



PATENTED

WRIGHT'S FRAME-WIRING DEVICE

Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, $2.50, postpaid in U. S. A.

G. W. Wright Company, Azusa, Calif.

NOTICE TO SUBSCRIBERS

We are obliged to cancel many of our prices of combinations of the American Bee Journal with bee books. Those desiring to take advantage of the combination offers will please disregard former offers and order per the followng list, which gives postpaid prices for the United States. For Canada add 10 cents for yearly subscriptions and for foreign countries add 25 cents:

Books	*Price postpaid alone*	*With A B J 1 yr*
Dr. Miller's "Thousand Answers" (ready March 1)		$1.75
Langstroth on the Honey Bee	$1.50	2.00
Doolittle's Scientific Queen Rearing	.50	1.25
Bee Primer	.15	1.00
Original Langstroth (reprint)	1.00	1.75
Productive Beekeeping	1.50	2.25
Beekeeping (Phillips)	2.00	2.50
A B C & X Y Z of Bee Culture	2.50	3.00
Dr. Miller's "Fifty Years"	1.00	1.75
Advanced Bee Culture	1.00	1.75
How to Keep Bees	1.00	1.75

AMERICAN BEE JOURNAL, Hamilton, Ill.

"Every Day is Honey Day at Our House"

Give the Children Honey

NATURE'S OWN CONFECTION

Fresh from Pellett's Apiaries

FOR SALE HERE

Attractive cards like the above for store windows will help sell honey. Size 9x11 inches. Printed in two colors. Price, 5c each; six for 25c, postpaid.

Another card gives cuts showing relative food value of honey and other products. These cards are the same size as the above, and in two colors. Just the thing to place in stores to push sales of honey. Prices 5c each; six for 25c. Postpaid.

American Bee Journal, Hamilton, Ill.

HONEY AND BEESWAX

CHICAGO, Jan. 18.—Comb honey is beginning to move a little more freely than for the past 30 days, and it may be that we will clean up yet to a greater extent than was the expectations 60 days ago. Prices are, if anything, weaker.

Best grades of white are bringing 14c per pound with an occasional small lot at 15c per pound. Amber grades are from 12@2c per pound less. Extracted remains steady at from 9@10c per pound for the best grades of white with ambers at 7@8c per pound. Light ambers, good flavor, at 9c per pound. Beeswax is ranging at from 30@32c per pound.

R. A BURNETT & CO.

SAN ANTONIO, Jan. 15.—There is little or no honey offered in quantities for shipment from Texas at this time. Nearly all surplus in hands of producers has been marketed. Extracted, according to color and flavor is bringing 8@10c in wholesale markets. Beeswax is very firm. We are paying 27c cash and 30c exchange.

SOUTHWESTERN BEE CO.

KANSAS CITY, MO., Jan. 18.—The honey market is slow, about $2 85 being the top price for fancy white comb honey down to $2.50 for No 2 On account of the raise in the local freight rates, the consumption of honey has been curtailed considerably, but we understand that the railroads will adjust these rates after the first of the year and we believe there will then be a better demand for comb honey. Extracted is firm at 7½@9c a pound, and No. 1 beeswax is selling at 25c a pound.

C. C. CLEMONS PRODUCE COMPANY.

CHICAGO Jan. 19.—The honey market is very quiet and we are very much surprised for the reason that it is the cheapest commodity on the market. We have over two carloads of comb honey on hand. We have already sold three carloads up to date, but it looks as though we are going to have a better demand after the first of the year We are selling 24 section cases for $2 75 to $3.00, extra heavy weights glass fronts $3.25. Extracted honey is in light supply and the demand is very active, selling 9@10c.

Beeswax ranges from 27@32c, according to quality and brightness. We are advertising the honey liberally in the different ways in order to create a bigger demand. Let us all work as best we can. D. J. COYNE.

DENVER, Colo., Jan. 18.—The demand for comb honey in carload lots is improving. We are quoting the following jobbing prices; Comb honey, fancy white, $2.84; No. 1 white $2.70; No. 2, $2 57; per pound of 24 sections. Extracted, white, per pound, 9@9½c; light amber, 8½@9c per pound. we are always in the market for beeswax; for clean yellow wax we are paying 30c per pound in cash and 32c in trade, delivered here in Denver.

THE COLO. HONEY PRODUCERS' ASS'N.
F. Rauchfuss, *Mgr.*

EASTERN BEEKEEPERS

This is the time of year you should get your supplies and put them together. You not only have them ready when needed, but you also get the discount.

Our catalog of everything a beekeeper uses will be mailed free upon request. Let us quote you. One pound round flint glass honey jars $5.00 a gross.

I. J. STRINGHAM
105 Park Place, N. Y.
APIARIES: Glen Cove, L. I.

BEE-SUPPLIES of all kinds; catalog free. Send 25c for 90-page book on how to handle bees. Discount for early orders. Honey for sale.

J. W. ROUBE, Mexico, Missouri

THE CAMPBELL SYSTEM OF SOIL CULTURE

Everybody knows Campbell, the father of dry farming. Everybody knows that he started this great movement for Scientific Farming that is changing the desert into a garden. But everybody does not know that there is a great school, the

CAMPBELL CORRESPONDENCE SCHOOL OF SOIL CULTURE

where the Campbell System of Scientific Soil Tillage and Crop Growing are taught by mail, where a thorough knowledge of Scientific Agriculture can be secured without leaving home, at a very small expense. If you are a farmer or expect to be a farmer, send for the Campbell literature, Campbell's Scientific Farmer, the Campbell manuals, and a catalog of the Campbell Correspondence School. Sample copy and catalog free. Address,

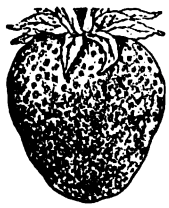
CAMPBELL CORRESPONDENCE SCHOOL
325 Broadway - - Billings, Montana

"ROUGH ON RATS" ends RATS, MICE, Bugs, & Don't Die in the House. Unbeatable Exterminator. *Ends* Prairie Dogs, Gophers, Ground Hogs, Chipmunks, Weasels, Squirrels, Crows, Hawks, etc. The Recognized Standard Exterminator at Drug & Country Stores. Economy Sizes 25c, 50c. Small 15c. Used the World Over. Used by U. S. Govt. Rough on Rats Never Fails. *Refuse ALL Substitutes.*

20 Packets Seeds—10c.

We want every reader to test **"HARRIS SEEDS THAT HUSTLE."** Send 10c. now—before you forget for this mammoth collection. We send you 20 separate packets finest varieties—one each—of **Beets, Carrot, Cabbage, Celery, Cucumber, Lettuce, Cress, Muskmelon, Watermelon, Onion, Parsley, Parsnip, Radish, Salsify, Spinach, Tomato, Mixed Poppies, Giant Cosmos, Double Jap Calendula** and **Children's Botanical Garden,** a curiosity collection of flower seeds. With this collection we send rebate check for 10c. and big catalog of world's finest seeds.

HARRIS BROS. SEED CO., 284 Main St., Mt. Pleasant, Mich.



4 MONTHS FOR 10c

Trial Subscription To Fruit and Garden Paper

Tells about planting, pruning, spraying and selling fruit and garden truck.

Ask Us Your Hard Questions,

We conduct this department for the special benefit of our subscribers. Experts answer all questions by mail and through the columns of the magazine.

Fruitman and Gardener, 1111 Main St. Mt. Vernon, Ia.

CASH paid for butterflies, insects. Some $1 to $7 each. Easy work. Even two boys earned good money with mother's help and my pictures, descriptions, price list, and simple instructions on painlessly killing, etc. Send 2c stamp at once for prospectus.

SINCLAIR, Box 244, D Los Angeles, Cal.

Paint Without Oil

Remarkable Discovery that Cuts Down the Cost of Paint Seventy-Five Percent

A Free Trial Package is Mailed to Everyone Who Writes

A. L. Rice, a prominent manufacturer of Adams, N. Y., has discovered a process of making a new kind of paint without the use of oil. He calls it Powdrpaint. It comes in the form of a dry powder and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone or brick, spreads and looks like oil paint and costs about one-fourth as much.

Write to Mr. A. L. Rice, Manufacturer, 23 North Street, Adams, N. Y., and he will send you a free trial package, also color card and full information showing you how you can save a good many dollars. Write today.

29 Years' Potato Experience
For over a quarter of a century I have made a specialty of growing and handling Choice Seed Potatoes, testing all the leading varieties, retaining and improving the best. This year's list is the cream.
My 30th Annual Seed Book
should be in the hands of every progressive farmer and gardener. It contains 96 pages crowded full of valuable information. The best in Seed Potatoes, Field and Garden Seeds of all kinds. Write postal today.
L. L. OLDS, President
L. L. Olds Seed Co. Drawer 12 Madison, Wis.

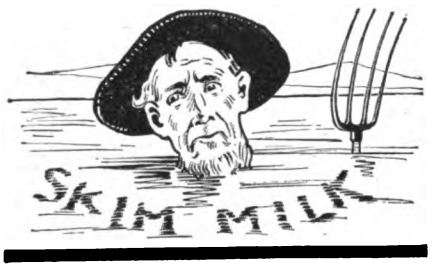
GOOD USED PIANOS AT CLEARING SALE PRICES SOLD UNDER WARRANTY AND SHIPPED ON APPROVAL AT OUR RISK FOR ALL FREIGHTS AND HANDLING CHARGES

George W. Lyons Studio, small size; $75.
Ernest Gabler & Bro., upright, rosewood, medium size, excellent tone; $85.
Pease Piano Co., upright, rosewood; $100.
Smith & Barnes, upright, mahogany; $115.
Mason & Hamlin, upright, ebonized, dull finish; $125.
Sheraton upright, mahogany, nearly new; $135.
Empire Piano Co., upright, mahogany, superior tone; $150.
Fischer upright, golden oak, fine condition; $175.
Fischer upright, mahogany, like new; $200.
Story & Clark, upright, elaborate style, mahogany; $225.
Knabe, upright, mahogany, perfect condition; $250.
Behr Bros., upright, mahogany, slightly used; $275.
Knabe, upright, mahogany, Colonial style; $300.
Steinway, upright, mahogany; $350.

Cash prices; but easy payment terms at 6 percent interest if desired.

For further information write World's Largest Music House.

LYON & HEALY CHICAGO, ILLINOIS



Who wants to wade through skim milk up to the chin? Then why spend *hours* digging out facts that you can get to in *minutes?* The Farm Journal dumps the skim milk. Gives you nothing but the cream!

No dilly-dallying. No editorial frills or fixin's. Good, live, clean talks. Farm facts by experts. Household helps and practical, money-saving suggestions for Mother. Always enough first-class reading to interest *every* member of the family. Send $1 for 5 years' subscription. Money back any time. Or ask for free sample copy and *your* Poor Richard Almanac for 1917. It's free, too!

The Farm Journal

201 Washington Square, Philadelphia

The Double-Walled Massie Bee-Hive

Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate

THE MASSIE HIVE

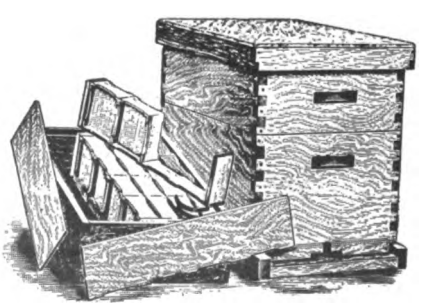
For Comb or Extracted Honey

Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracting Frames made from White Pine

VENTILATED BOTTOM

Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee-supply business has shown us that the **Massie is the very best hive,** and testimonials to this effect are received daily from those who are using this hive.



The Dovetailed Hive for Comb Honey

Why Not Give Us a Trial Order? **Satisfaction Fully Guaranteed**

We are also extensive manufacturers of **Dovetailed Hives and all other Apiarian Supplies.** If you are in the market for supplies be sure to get our prices before buying elsewhere. We will mail our large illustrated catalog and **special price list** to any one upon request

KRETCHMER MFG. COMPANY, 110 3d St. Council Bluffs, Iowa

NOTICE TO BEEKEEPERS!

We are now booking orders for our 3-banded Italian queens and combless packages, and will furnish them during April, May and June at the following prices:

Prices of Combless Packages Without Queens*

Size 1-lb. each	$1.35
" 2-lb. "	2.35
" 3 lb. "	3.35

Three-Banded Italian Queens for April, May and June

Untested, each	$ 1.00	Tested each	$ 1.50
" 6	4.50	" 6	8.00
" 12	8.00	" 12	15.00
" 100	65.00	" 100	100.00

Select tested, $2.00; breeders, $3.00

* In lots of over one dozen packages get our prices. If queens are wanted, add wholesale price and state kind.

Our Mr. A. B. Marchant has retired from the production of honey and will manage our yards for the package and queen trade. Therefore, we will be in a better position to fill all orders with dispatch. Having doubled our capacity we believe we can fill all orders the day they are due. We have introduced new blood in all our yards, and we have a strain of bees second to none. Our packages are shipped the same day they are caged. Our bees for our packages are all reared above an excluder; therefore, we ship nothing but young bees, as young bees stand the trip better than older ones. We guarantee freedom from all diseases and safe arrival in the United States, and Canada. Place your orders early, as first comes first served. Write for prices on large orders.

MARCHANT BROS., Union Springs, Ala.

PURE MATING GUARANTEED—QUALITY FIRST

I am better equipped to take care of all orders, both LARGE AND SMALL, having located my queen and package business in Georgia. Our mail and express service is excellent, having 24 out-going trains DAILY—will make delivery same day order received.
Will be glad to hear from parties wanting LARGE QUANTITIES, as I am prepared to handle any size orders—will be glad to furnish sample of my combless package—will guarantee safe arrival in United States and Canada. Get my prices on 100-pound lots, and over my price will make you order from me.

Prices on Queens for March 15th to May 1st delivery.

	1	6	12
Untested	$1.50	$ 7.50	$12.00
Tested	2.00	10.50	18.00
Select Tested	3.00	15.00	24.00

Breeders, $5.00 and $10.00

Prices for bees by the pound without Queen begin April 15th.

	1	6	12
1-pound	$1.50	$ 8.00	$15.00
2-pound	2.50	14.00	27.00
3 pound	3.25	18.50	35.00

Prices of nuclei without Queens begin shipping April 15th.

	1	6	12
1-frame	$2.00	$10.50	$18.00
2-frame	2.50	12.00	22.00
3-frame	3.50	20.00	37.00
5-frame	5.00	23.00	44.00

J. E. MARCHANT BEE & HONEY COMPANY. Columbus, Georgia

TYPEWRITER SENSATION

$2.50 a Month Buys Visible Writing L. C. Smith

Perfect machines only of standard size with keyboard of standard universal arrangement—has Backspacer—Tabulator—two color ribbon—Ball Bearing construction—every operating convenience. **Five Days' Free Trial.** Fully guaranteed. Catalog and special price free.
M. A. SMITH, 314—231 North Fifth Avenue, Chicago, Illinois

CIRCULAR SAW MANDRELS AND EMERY WHEEL STANDS

Mandrels with boxes and pulley complete for bolting our frame. Three sizes. Circulars.

CHAS. A. HENRY, Eden, N. Y.

FOR SALE 10,000 POUNDS OF BEES SPRING DELIVERY

20 Years of Select Breeding Gives Us Bees of Highest Quality

BEES FOR HONEY PRODUCTION—BEES OF UNUSUAL VITALITY

As we are large honey producers as well as queen breeders, producing from one to two carloads of honey annually, we have ample opportunity to test out our breeding stock, used in our queen yards. Thus we are able to guarantee that all our queens will give satisfaction in every respect. If you want bees that are gentle as well as great honey getters let us book your order. Safe arrival guarranteed.

SWARMS OF BEES BY THE POUND WITHOUT QUEENS READY APRIL 1

1-lb. pkgs. $1.25 each; 25 to 50 pkgs. $1.22½ each; 50 to 100 pkgs. $1.20 each; 2-lb. pkgs. $2.25 each; 25 to 50 pkgs. $2.22½ each; 50 to 100 and up, $2.20 each; 3-lb. pkgs $3.25 each; 25 to 50 pkgs. $3.22½ each; 50 to 100 and up, $3.20 each.

GOLDEN AND 3-BAND ITALIAN QUEENS READY APRIL 1

Untested.....75 cts. each; $65.00 per 100	Tested.....$1.25 each; $110.00 per 100
Select untested.....00 cts. " $75.00 " 100	Select tested 1.50 " 125.00 " 100

Write for descriptive price list. Let us book your order now. Only a small deposit required.

LARGEST AND MOST SUCCESSFUL SHIPPERS OF BEES IN PACKAGES

M. C. BERRY & COMPANY, Hayneville, Alabama, U. S. A.

QUALITY

For fifty years Root Goods have held their pre-eminence. Why has this been so? Why have we been able to maintain a series of service branches and agencies all over the United States?

The answer is self-evident. Beekeepers always have and always will order their GOODS from the concern which offers them

QUALITY PLUS SERVICE

Send your order to the Branch or Agency nearest you and get low freight rates and prompt service. Order early as all prices are advancing.

The most up-to-date goods, the best that money can buy, are shown in our NEW 1917 CATALOG, which is all ready for mailing. Send for one today. A postal will bring it.

The A. I. Root Company, Medina, Ohio

SERVICE BRANCHES AT

New York City, 139 Franklin St.
Chicago, 215 West Ohio St.
Philadelphia, 8 Vine St.
Washington, 1100 Maryland Ave.
St. Paul, 290 East 6th St.
Des Moines, 915 Walnut St.
Syracuse, 1631 West Genesee St.
Indianapolis, 859 Mass. Ave.
Los Angeles, 948 East 2d St.
San Francisco, 245 Mission St.

MARSHFIELD GOODS

BEEKEEPERS:—

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality; best** for the price. If you buy them once, you will buy again

We also manufacture **hives, brood-frames, section-holders** and **shipping cases.**

Our catalog is free for the asking.

MARSHFIELD MFG. COMPANY, Marshfield, Wisconsin

EARLY ORDER DISCOUNTS WILL

Pay You to Buy Bee-Supplies Now

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.

DON'T WAIT TILL SPRING

Before having your beeswax made into foundation or to buy supplies. Prices were never more unsettled. Better take advantage of present low prices and early order discounts, by ordering now.

Write for prices and discounts.

GUS DITTMER COMPANY
Augusta, Wisconsin

PORTER BEE ESCAPE

SAVES HONEY TIME MONEY

For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Illinois, U. S. A.
Please mention Am. Bee Journal when writing.

FREEMAN'S FARMER North Yakima, Wash.

Successor to Northwest Farm and Home
60 YEARS OLD

If you want a descriptive and agricultural magazine, it will inform you all about the methods in the Pacific Northwest.
Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

NOW IS THE TIME

Prepare Now for Next Season

Do not wait until your bees are out of winter quarters to order your goods.

PROSPECTS FOR 1917

Are for another big one. Lotz Sections are the best; they are perfect in workmanship, quality and material. All guaranteed. We want you on our mailing list.

Send for 1917 Catalog

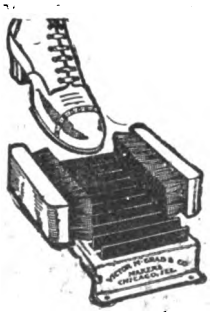
AUGUST LOTZ COMPANY
Boyd, Wisconsin

ESTABLISHED 1885

Our 1917 catalog of Bee Supplies will be ready this month. It is free. Write us for one. 64 pages full of information about hives, etc., pertaining to the apiary. We handle the best make of supplies for the beekeeper. Beeswax taken in exchange for supplies or cash.

J. NEBEL & SON SUPPLY COMPANY
High Hill, Montg. Co., Missouri

GET A FOOT SCRAPER FOR YOUR HOME



We still have a small stock of foot scrapers like cut on hand. Although these scrapers cost, postpaid, $1.00, we will send them out on your order at a postpaid price of 75 cents. Write today

AMERICAN BEE JOURNAL
Hamilton, - - Illinois

CYPRESS BY TEST
Substitutes by Talk
THE PROOF?—2 LETTERS FROM BEEMEN:

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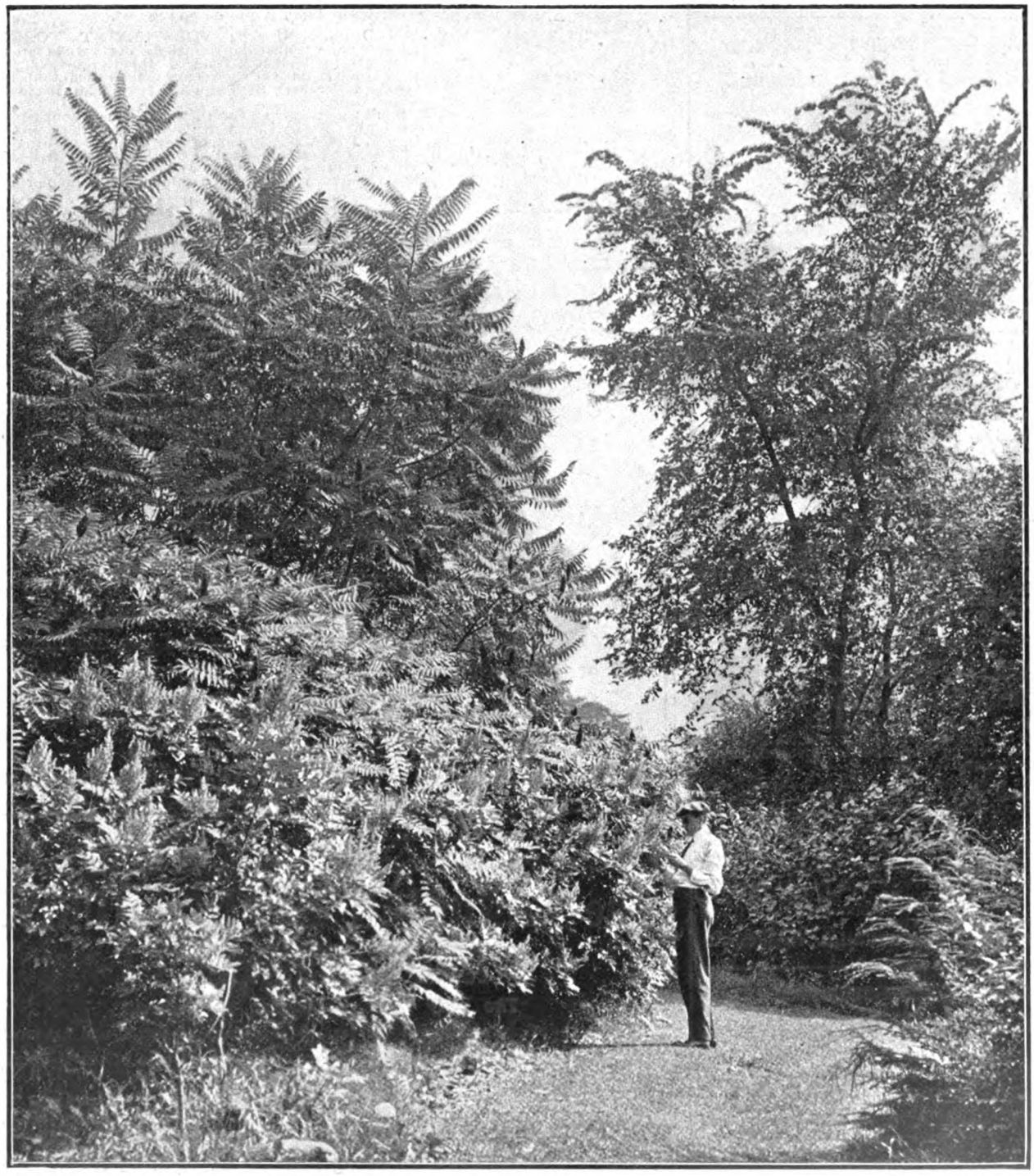

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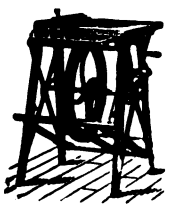

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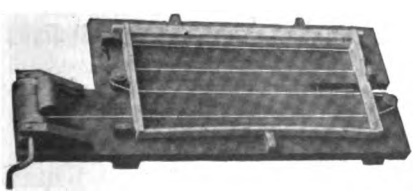

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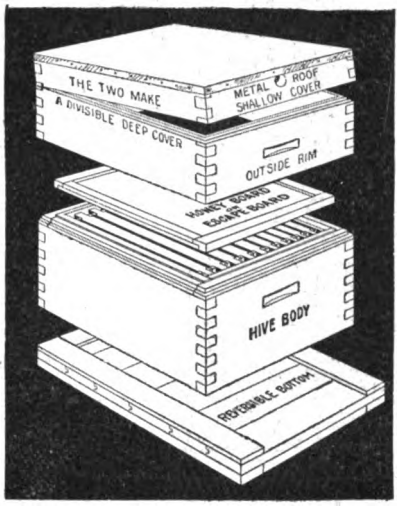

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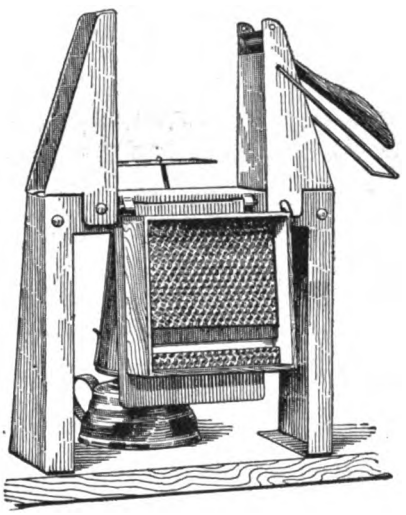

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Cases holding	24	24	....	12	6
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Virgins	3 for $1.00.		

	1	10
1-pound package, wire cage, without queen	$1.50	$1.25
2-pound package, wire cage, without queen	2.25	2.00

1-frame nuclei without queen, $1.50; 2-frame nuclei without queen, $2.75; 3-frame nuclei without queen, $3.50.

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AMERICAN BEE JOURNAL

Vol. LVII.—No. 3 HAMILTON, ILL., MARCH, 1917, MONTHLY, $1.00 A YEAR

HOUSE APIARIES

Advantages and Disadvantages of the System as Seen by Frank C. Pellett on a Visit With F. J. Strittmatter

FOR years I have been interested in house apiaries. The idea attracted me although I never had experience with one. Whenever I have raised the question of the possibilities of the house apiary all the argument has been against it. To quote Doctor Phillips, "The principal argument against house apiaries is that nobody uses them." One champion of the house apiary in this country is F. J. Strittmatter of Ebensburg, Pa., and it was to him I went for first hand information about this system.

When asked how he came to use the house apiary in the beginning, Mr. Strittmatter said that it was because he could see advantages which overbalanced the objections raised against them. He could find no encouragement in any quarter. He was told that nobody used them in this country and was advised to experiment carefully, with the expectation that the plan would not prove satisfactory. He built his first house apiary in the spring of 1910, and at the same time started an outyard in chaff hives. The first three years the bees in the house apiary made a little better showing and were much nicer to handle, since in the building he was independent of unfavorable weather. After three year's trial with one house apiary and two outyards he decided to put all the bees in house apiaries, and now after four years with all in house apiaries, he is fully convinced that for his climate the house apiary is much to be preferred.

OBJECTIONS TO HOUSE APIARIES.

That this is not a new subject in this country will soon become apparent upon referring to the old bee journals. In the American Bee Journal for March 1861, in a report of the first American Beekeepers' convention, there is a discussion of this same question.

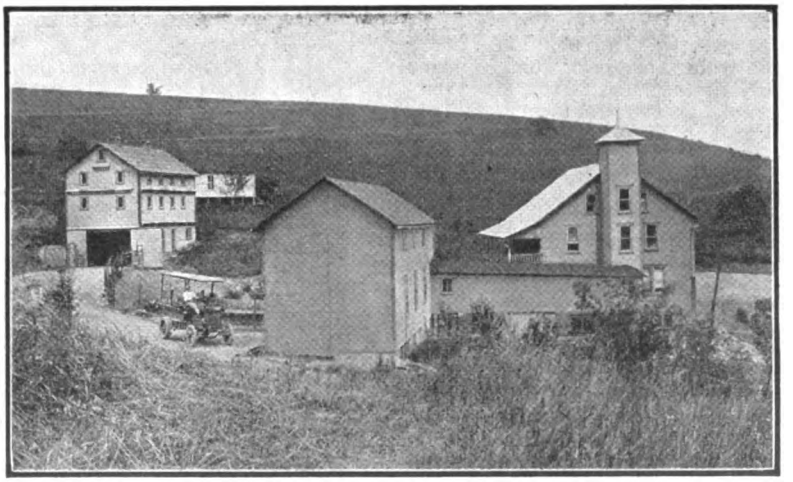
"Mr. Langstroth considered that bee houses were not the best for the apiarist, principally from the loss of young queens when they leave the hive for the purpose of meeting the drones, as they are apt on their return to enter the wrong hive, and be there killed, and the consequent decay of the queenless swarm; giving a great number of instances of this. He would say to all, **scatter your bees; place one hive under this tree and another under that, but scatter the hives.**"

The above quotation from Langstroth presents the most serious and most persistent objection to house apiaries. A friend of mine who lives in Minnesota tried a house apiary and abandoned it because the bees were too slow to get out in the morning. However, his building was situated among the trees instead of in the open sun as it should be.

With the entrances as close as they must be in a house apiary, there is some mixing of bees and some drifting from hive to hive after a long confinement. Another objection is that where so many hives are placed on the same floor there will be some tendency to irritate the bees in other hives while one is working in any part of the building, because of the jar. In a well made building such as Strittmatter uses, there would be very little apparent jarring from the ordinary operations necessary.

ADVANTAGES OF THE SYSTEM.

Several advantages will at once be apparent. In the first place since there are no bees flying about the operator except from the single hive which is open, necessary work may be attended to at any time without danger of robbing, and with greatly reduced annoyance from stings. The bees which fly out of the open hive usually fly to the windows and seek to escape to the open air, so that even the colony manipulated offers



THE STRITTMATTER BUILDINGS—HOUSE APIARY AT THE LEFT

less resistance in a building than outside. When the bees fly out, the surroundings are unfamiliar to them and they lose the desire to sting. Strittmatter cuts a small corner of each window-pane in each of the four corners of the sash, to permit the bees to escape.

Another important advantage is the control of swarming, which is a very simple matter under these conditions. Some years there have been no swarms in the Strittmatter house apiaries, as all that seems to be necessary to control swarming entirely is to give the bees plenty of room, and retain young queens.

In the same report from which the quotation from Langstroth above mentioned is taken appears the following:

"Mr. Sturtevant uses a large bee-house but does not allow the bees in it to swarm, but always divides his swarms, taking the queenless swarm away from the apiary, and if desirable returning it to the house after the queen is fecundated. * * * Hives must not be placed on a common level, where they can run from one to another. His bees had laid up an immense quantity of honey the last season; the house is airy and cool, built of brick. Hives should face in different directions."

Strittmatter tries to have young queens mated from the corner hives and reports that he has little more trouble from the loss of young queens in the building than in the hives outside. He has the fronts of the hives painted four different colors, which helps materially to keep the bees from mixing or the queens from going astray.

Another advantage is the protection against changing weather conditions of spring, and, in wintering. The brood chambers are built in with four inches of sawdust packing surrounding each hive. This additional protection enables the bees to build up rapidly in spring, as there is no danger of chilled brood because of a sudden drop in temperature outside. The winter preparation, also, is but a matter of a few minutes. When the honey is taken from the hive in the fall all that is necessary is to see that the colony is in proper condition for winter and to put the cover in place and throw the quilts or other top packing over the tops of the hives. The cost of winter cases and the labor of annual packing is saved by this plan.

Rainy days are no hindrance to work, as it is possible to remove the honey inside a house apiary with a minimum of discomfort at any time

HOUSE APIARIES OF OTHER DAYS.

After paying a visit to Mr. Strittmatter and seeing how enthusiastic he is over the house apiary after seven years of trial, I have been much at a loss to determine why they are not more generally used. Many well known beekeepers tried them in the early nineties and the journals for several years were full of enthusiastic accounts of successfully conducted house apiaries. In this connection a review of the principal suggestions of a few of these articles may be of interest. In the Beekeepers' Review for September 1892 an article by E. R. Jaques describes the B. Taylor house apiaries at Forestville, Minn. From this article I quote as follows:

"The first point scored by the house bees over those in the yard was this—they built up faster in early spring thus becoming strong in numbers in time for the clover harvest. * * *

"It is much more comfortable in the house, out of the hot sun with all your supers, honey-boards, bee escapes and the like on shelves in easy reach. Then, too, you will not be troubled as much with robbers and will have little use for smoke and veil; for however cross a bee may be out-of-doors she becomes a lady in the house. * * *

"On the other hand I think the house queens will be much more apt to get lost on their mating trips. * * * The lifting of hives and supers will be found heavier work in than out of the house.

"Now for results in honey gathered to date (July 24th). Twenty colonies in the house have 100 pounds each of comb-honey in the supers, while twenty of the best colonies in the yard have stored but 75 pounds each.

"I think the house apiary has come to stay but do not believe it will be a success except in the hands of a skilled apiarist."

During the year 1891 the Review contained several articles on house apiaries and nearly all reporting favored their use. In the July issue, J. P. Moore, of Binghampton, N. Y., reported having used one for 19 years. Mr. Moore described the house somewhat in detail and gave rather flattering accounts of its advantages. One item is of especial interest:

"In spring as soon as the bees begin to raise brood, the temperature of the house rises and it is readily seen that many weak stocks that would be of no value outside are enabled to breed up, on account of the temperature maintained by the other bees.

Not all reports were favorable, however, as witness the following from J. B. Hains of Bedford, Ohio:

"At the outset I desire to say that I regard the house apiary as worse than useless and a very expensive establishment to keep up. * * * In the year 1879 I erected a house apiary, fitted it up in the most modern style, put in 48 colonies of bees which wintered fairly well but dwindled so in the spring, especially on the north side, that I was compelled to draw on the yard apiary to make them good.

INTERIOR OF HOUSE APIARY SHOWING BUILT-IN HIVES WITH SUPERS

STRITTMATTER'S CARROLLTOWN HOUSE APIARY

I secured about half as much honey from the house apiary that season as I did from the hives outside, but was unwilling to abandon the experiment. The second spring was a repetition of the first. * * * The loss of bees is a small matter compared to the loss of labor in caring for them."

James Heddon reported two years experience with a house apiary that was a practical success. He answers the objections raised against it rather convincingly and sums up the advantages thus:

"The house apiary possesses some splendid advantages. Out of the sun, out of the rain, out of the wind, out of the reach of thieves, implements and bees close together, and last but not least out of the reach of robber bees. * * *

"On the whole, I think the house apiary, when rightly made and managed, is, in many localities a thing of comfort and profit."

Mr. Heddon cited the oft repeated objection of loss of queens from entering the wrong hive and admitted having more queenless colonies in the house apiary than outside.

As far as cost is concerned there are numerous reports to the effect that a house apiary large enough to serve as a combined work house, honey room and apiary, can be built as cheaply as the usual equipment for an apiary can be had, including the necessary building.

After referring to all reports which I have been able to find in the old Journals, I am inclined to believe that some of the trouble arose from building the houses too small and too dark. Strittmatter provides plenty of room and an abundance of light. While there were numerous reports of loss of queens, this objection seems not to be an insurmountable obstacle as some report satisfactory results after many years of use. Apparently, however, expert attention is necessary in order to succeed with bees in house apiaries. Heddon advised against the built-in hives, but adjusted his hives to special entrances in the house. It was thus possible to take hives containing queencells to the open air and leave them until the queen had been mated, after which they could be returned to the house. Since swarming is much easier to control within the houses, the amount of moving that would be necessary would not be great. This is, of course, impossible with the Strittmatter system of built-in hives.

Since house apiaries are in general use in many parts of Europe, they surely must be suited to certain conditions. While there are few apiaries there conducted on a large scale followed by many producers in America, we may still learn many things from beekeepers across the sea.

Beekeeping in Sweden

BY JOHN A. JOHNSON.

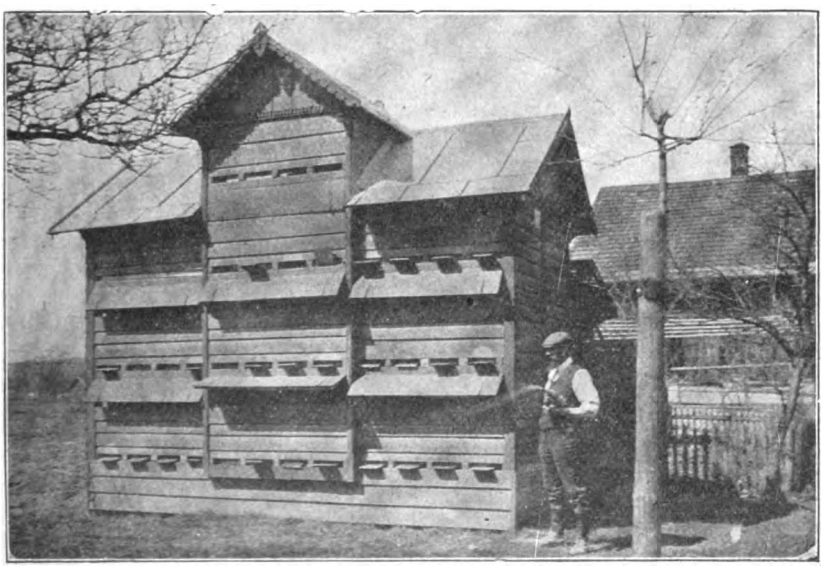
"*Bitidningen,*" *the Swedish bee journal, official organ of the Swedish Beekeepers' Association.*

IN the annual report given in the January, 1916, number, we find that the association had a membership of 5016; a fine showing indeed for a country of Swedens' location and population. If the National Beekeepers' Association would obtain a proportionate membership we would number over 100,000 members. Their organization is in a flourishing condition and was formed after the German and Swiss associations, the local or district association "Krets," is subordinate to the National.

They have an official label for the honey of members, and each "Krets" is responsible for the purity, cleanliness, and quality of the honey of its members when offered under the association's label. They also established the price for which the honey shall be sold. They are vigorously fighting honey adulterations, and try to show the inferiority of glucose concoctions which masquerade before the public as honey. Unfortunately the glucose manufacturers are allowed by law to use the name "Inverted honey" marked on their labels.

The association also does cooperative buying of some supplies, such as containers, cans, and sugar is gotten direct from the refiner for feeding purposes, even under the present abnormal conditions. The beekeepers receive respectable rebates from the refiners.

HOUSE APIARY OF E. C. BARBER, AT FRAMINGHAM, MASS., WHICH THE OWNER REPORTS AS QUITE SUCCESSFUL



ONE OF THE WARTMAN HOUSE APIARIES AT BIENNE, SWITZERLAND

Honey was sold as low as one crown per kilogram (about 11 cents a pound) before the war, but now it is advertised as high as three crowns per kilogram (41 cents a pound). One dealer in Stockholm claims to have imported the finest white California honey from the Santa Clara district before the war for about 13½ cents a pound. The Swedish beekeepers resent the importation of foreign honey in competition with their own. Extracted and strained honey are produced almost exclusively.

There seem to be as many kinds and sizes of hives and ideas about the merits and demerits of the different hives as here. A large number of straw skeps are also kept as well as movable-frame hives with sides and ends of woven straw and a frame. Queen excluders made entirely from wood are advertised by the manufacturers.

A recipe for a very popular honey drink, more of a beverage than mead, is given.

Pomeroy, Iowa.

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C. P. Dadant, Editor.
Dr C. C. Miller, Associate Editor.
Frank C. Pellett, Staff Correspondent.

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THE EDITOR'S VIEWPOINT

The National Meeting

The National Beekeepers' Association met on Feb. 6-8 according to schedule. The terrific storms that raged through our northern States at that time prevented the attendance of a number of leading men. Neither E. R. Root, E. D. Townsend, Frank C. Pellett, Wm. Copenhaver, Morley Pettit nor R. A. Burnett were present. The papers to be read by these men were also missing.

However, Pres. Jager is a man of extraordinary resources and the meeting was rendered exceedingly interesting through his strenuous efforts. His address, showing the need of organization was spoken with great enthusiasm. He insisted upon the need of uniform packages for the sale of honey. He affirmed, as others have done before, that the beekeepers of America need union as much as the National canners and other associations placing an article of consumption before the public. Irregular packages must be abandoned and standard methods adopted, through a National Committee. He showed the need of securing uniform laws for the protection of producers against adulteration, misrepresentation and unfair competition. Organization of beekeepers throughout the land is indispensable.

Our old friend, N. E. France, addressed the meeting with words of welcome, with remembrances of the past. Mr. France is probably the only beekeeper State Inspector of bees whose office is permanently located in the Capitol Building of a State. He has proven so efficient that instead of opposing his work as is done in so many places, the State officials sustain it.

Doctor S. A. Jones, statistician at Washington, was present and explained the necessity of the beekeepers cooperating with the general government by furnishing statistics which will be collected together and returned to the producers, showing them exactly how much and where there is honey produced. National Committees should look after these reports and advise the beekeepers through the journals as to what prices to expect. An arrangement of this kind during the past summer would have helped to secure very much better prices for the producers. The attempts of the government have so far received but lukewarm response.

Doctor E. F. Phillips gave the audience an insight into the extension work undertaken by the government. He described conditions in such States as North Carolina, where two-thirds of the apiaries are still put in mourning when a member of the family dies. "Telling the bees" is still the custom. Each colony is moved a few inches on the anniversary of the birthday of Geo. Washington. The honey is taken up during the first full moon of June, as they do not think any other time is proper. The strange thing is that 52 percent of all the bees in the United States are located in 15 southern States and about 90 percent of these are still in gums or box-hives.

Doctor Phillips showed what a little missionary work will achieve, by saying that the famous Alexander, of Delanson, N. Y., came very near giving up beekeeping in disgust when his bees were attacked by European foulbrood. A 15 minute talk with the well known inspector, Chas. Stewart, caused him to remain attached to the pursuit and it was through his later experiments and success that the present method of successful treatment of European foulbrood was devised.

That we need organization in every State in the Union is quite evident. We are just at the "Forks of the Road," as so ably shown by Dr. L. D. Leonard of Minneapolis, Minn.

A resolution was passed heartily endorsing the extension work of the Department of Agriculture.

Wesley Foster gave a long talk on "Distribution of Honey." Uniformity of packages, choice of good reliable dealers in cities, closer acqaintance between producers and dealers, full information concerning crops and markets were some of the subjects touched by him.

Professor H. C. Taylor, of the University of Wisconsin, explained methods of bookkeeping for the producers, so they might positively learn where their profits and their expenses are.

Hamlin B. Miller, secretary of the Iowa Association, in his inimitable style gave a long talk on how to increase the membership of the association. His cry was, "Retain your present president." It was done, for Prof. Jager was re-elected. Polhemus, of Colorado, was elected vice-president and John C. Bull, of Indiana, secretary.

Mr. Herman Rauchfuss, of Denver, Colo., represented his brother and explained how the Colorado Honey Producers' Association having commenced with a capital stock of $110, years ago, have increased to a capital of $50,000 through perseverance and honest dealing.

George W. Williams, of Redkey, Ind., ably supported by Mr. Hassinger, an intelligent young beekeeper of Wisconsin, spoke interestingly about the necessity of teaching the uses of honey in the Domestic Science department of the common schools. A committee of the United Honey Producers is to work in connection with a similar committee appointed by the president of the National, on this subject.

In spite of the unfavorable weather the meeting was a great success and most of the beekeepers in attendance expressed their desire of being able to attend future meetings. The next location of the National convention is to be decided by the Executive Committee.

A more detailed account of the Madison meeting is just at hand from Pres. Jager. This will be published in the April number.

Prevention of Swarming

A large number of readers have expressed the desire to secure the address which the editor delivered last year at nine different conventions on the above named subject. So we will publish it in the April issue.

Our Market Page

On another page of this number we are beginning a department of "Crop and Market Conditions." The page itself will show just what we aim to do. A page of this kind will not succeed unless it has the cooperation of a large proportion of our subscribers, and we

cannot, of course, afford to circulate our whole list each month to assemble such reports.

We would urge, therefore, that each subscriber secure a few postal cards and write us the conditions as seen in his section of the country. Make your report as brief as possible and address to "Market Editor," American Bee Journal. These reports should reach us at least by the 20th of the month to do any good for the next issue.

The department at Washington, for several years, has been gathering such statistics, but usually owing to the reticence of correspondents to answer reports, summaries of conditions come out too late to be most effective. We are, however, getting in touch with the department in hopes of embodying as much of its data as possible in our crop report each month.

The climatic conditions are such that the report from one section will be on the honey crop, while from another it may report the bees as they are just coming out of winter quarters. The points to be touched upon in answers are roughly as follows:

1. Condition of honey market—amount of honey unsold and demand unfilled?
2. What percent of loss of bees from wintering?
3. Honey-plant conditions compared to normal?
4. Are beekeepers increasing number of colonies materially?
5. Are many turning from comb to extracted honey?
6. How is the honey crop so far compared to last year?

Remember to give true conditions, not failing to report if the season has been a failure, or if beekeepers are discouraged from winter losses, as well as to report successes.

Come ahead with your answers, the more the merrier. Write on a post card, number your answers as above, write plainly and briefly, and address card to the MARKET EDITOR, American Bee Journal, Hamilton, Ill.

This department is simply an experiment. If it succeeds it will be because of the interest taken in it by the beekeepers.

Death of Edouard Bertrand

Our old friend, Mr. Bertrand, died in Geneva, Switzerland, Jan. 17, in his 85th year. We received the news of his demise through letters from both Mrs. Bertrand and Mr. Thomas Wm. Cowan, editor of the British Bee Journal, to whom Mrs. Bertrand wrote at the same time as to us. Mr. Cowan's letter reached me at the same time. I quote a few words of his letter:

"I am sure you will feel the loss, and for me it was a great shock, as it was only a few days before that I had received a letter from him dated Dec. 20, in which he spoke very cheerfully of his health.....Bertrand and I have been constant correspondents now for 33 years, and had so much in common that, although he had attained a great age, the end is a trial which has grieved me much. He was a faithful friend, more as a brother, and during the whole time of our acquaintance we had never a disagreement. I was looking forward to the termination of this dreadful war to running over to Switzerland to pay him another visit, but now this is not to be, and I sorrow that I shall not see him again."

Mr. Bertrand was for 25 years editor of the magazine which he began under the name of "Bulletin D'Apiculture" in 1879, and later published as "Revue Internationale d'Apiculture." He is the author of several works on bees. We intend to devote a few pages soon to his biography. Meanwhile we can assure his devoted wife that the sympathy of the American beekeeping world is with her. Mrs. Bertrand has been a companion and an associate of her husband in his bee-work for 51 years.

Old Bee Books

In the first issue of the American Bee Journal, which appeared January, 1861, there appeared an advertisement of bee-books. There are seven books in the list, only two of which are still offered for sale. "Mysteries of Beekeeping Explained," by Quinby, and "The Hive and Honey Bee," by Langstroth, were so valuable that others have revised them and kept them up to date since the deaths of their authors, and both are now listed in nearly every catalog of bee-books. The rest of the list follows:

"Hive and Honey Bee," by H. D. Richardson.
"Beekeepers' Manual," by T. B. Miner.
"Bee Culture," by Henry Eddy.
"Beekeepers' Chart," by E. W. Phelps.
"Manual of Bees," by John M. Weeks.

Some of these books the writer never had even heard of until the advertisement in the old journal was read, and it is doubtful whether copies of all of them could be found in any one library. In order to live for 50 years a book must deal with fundamentals, for superficial matter is soon forgotten.

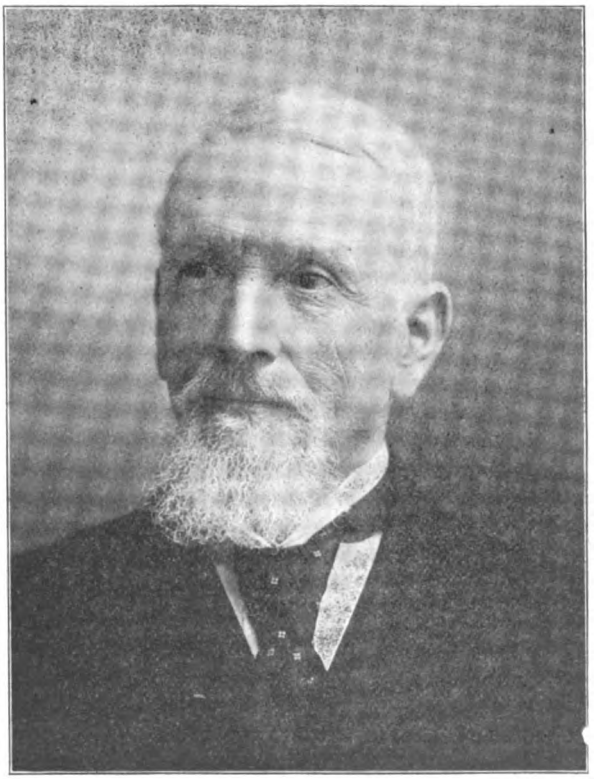
Obituaries

We are sorry to announce the deaths of J. Vandervort, Laceyville, Pa., Feb. 10, and D. C. Polhemus, of Lamar, Colo., Feb. 13.

Mr. Vandervort was the first man to manufacture foundation mills, making different thicknesses of walls for different weights, and in the eighties he made the first mills capable of turning out foundation over 12 feet to the pound.

Mr. Polhemus was a noted apiarist of Colorado, and his death followed his election as vice-president of the National Beekeepers' Association, after only five days.

These men both deserve a longer obituary notice, and we hope to be able to give it in our next number.



THE LATE EDOUARD BERTRAND, OF SWITZERLAND

No. 5.—Among Eastern Beekeepers

BY THE EDITOR.

AS stated in my last article, I returned to Amherst Aug. 16, to meet Mr. Bocock, the English apiarist, microscopist and scientist, who is making a special study of adult worker-bee diseases. Mr. Bocock had visited the West and had just returned to New England.

Most of our readers know of the dreaded disease called "Isle of Wight" or "Microsporidiosis," but few of them know that 80% of the bees of the British Isles have been destroyed by it. It started in 1904, in the southeast corner of the Isle of Wight, reaching the nearest parts of the main land in 1909, spreading across it in the direction of the prevailing wind.

"Nosema apis" discovered by the German, Dr. Zander, in 1909, is thought to be the cause of the disease, as it is found in large numbers in the intestine of the diseased bees. Most of us have thought that what is here called "bee paralysis" was the same disease. But aside from the fact that "nosema apis" is not usually found in cases of bee paralysis, Mr. Bocock holds that the symptoms are different. In "Isle Of Wight" there are none of the tremulous motions seen in the other disease which are responsible for the name given: "paralysis". The bees simply drag themselves out of the hive unable to fly, and die by the thousands, in front of the hive. By a singular coincidence, this trouble was seen at the Amherst experimental apiary shortly after the arrival there of Mr. Bocock, in June. But it did not last and when I came all symptoms of it had disappeared. Nosema apis has been found in healthy bees in the United States and it is probable that the climate has something to do with its wide spread in England. The bees diseased with paralysis rarely discharge their feces, and for that reason the disease has been called "constipation", but in Isle Of Wight disease Mr. Bocock stated to me that diseased bees could often be induced to discharge the contents of their abdomen by simply touching them with a blade of grass or a light stick.

Mr. Bocock is authority for the statement that, within a radius of 10 miles of Cambridge, England, more than 5,000 colonies of bees have died of that disease in the past 10 years. He says that Italian bees make a better fight against it than the common bees.

As to a remedy, none of positive efficacy has yet been found, although several claims to the efficiency of "bacterol", "izal", and "dioxogen or peroxide of hydrogen" have been made in the British Bee Journal. Mr. Bocock was very careful and conservative in his statements, as all scientists are, and confined himself to the assertion that no remedy that he knew of was as yet proven efficacious.

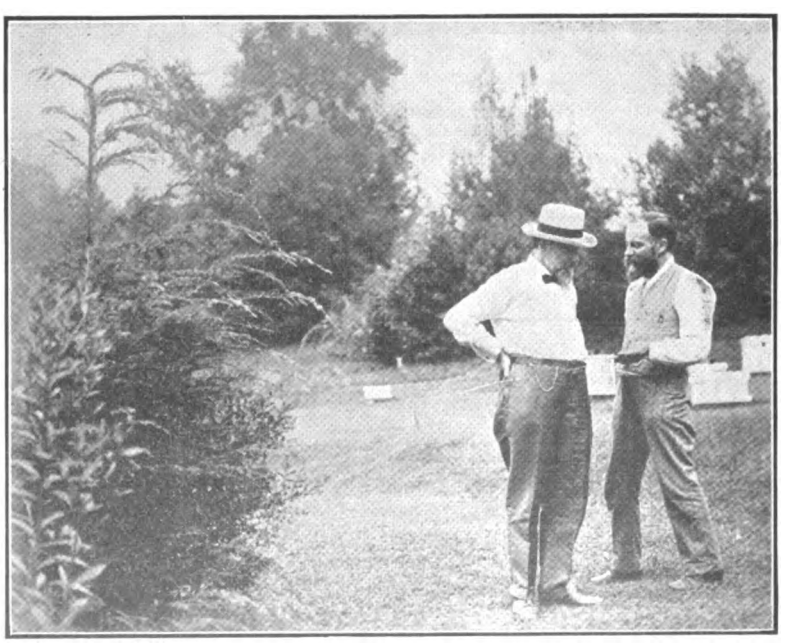
Since the above was written, some interesting information has been furnished in Australia, concerning Nosema apis. Investigations made and reported in the December number of the "Australasian Beekeeper," page 105, indicate that this parasite is "present in almost every apiary, that even wild bees in trees are affected, that it is merely a casual inhabitant of the alimentary canal of the bee." Yet the diseases ascribed to Nosema in Europe have but little force in Australia, probably owing to climatic conditions, "the drier atmosphere and the greater heat of the sun during the summer arresting the progress of the disease." It is also held that, owing to the universal presence of the parasite in question, it would be "hopeless to attempt the eradication of the disease by destroying the infected combs and bees."

Mr. Bocock himself expresses doubts concerning the actual influence of Nosema apis in adult bee diseases. He wrote me under date of December 13:

"I am sending you by a later post Part I of Volume XX of the Proceedings of the Royal Physical Society in which you will find two papers dealing with researches and experiments in the matter of I. O. W. disease that have been conducted in Scotland. The investigators seem to have reached about the same con-

PROSPECT PINE—JACOB'S LADDER ROADWAY AT BECKET, MASS.

P. Z. CRANE
Son and partner of J. E. Crane, with his little daughter



MR. BOCOCK AND THE EDITOR DISCUSSING ISLE OF WIGHT DISEASE NOSEMA APIS AT THE AMHERST EXPERIMENTAL APIARY

clusion as myself, viz: that it is doubtful if Nosema apis is the causal organism of I. O. W. disease".

The Bulletins mentioned had already been received by me from Mr. John Anderson, of the North of Scotland College and were given a mention in our January number, page 11.

Mr. Bocock is also a student of foulbrood in its different forms. He described to me and illustrated a method of recognizing European foulbrood, which he obtained from our Dr. White, by examining the alimentary tract of the larva. In a healthy larva the duct which runs through the insect is of a dark color. In European foulbrood the alimentary duct is white with the "bacilli pluton" which are thought to cause its death. In sacbrood these would not exist.

The reader will readily understand with what interest I listened to the explanations of so able a student. Mr. Bocock came to the U. S. May 21 and was to leave August 26 for his home in England. It was a treat to meet him.

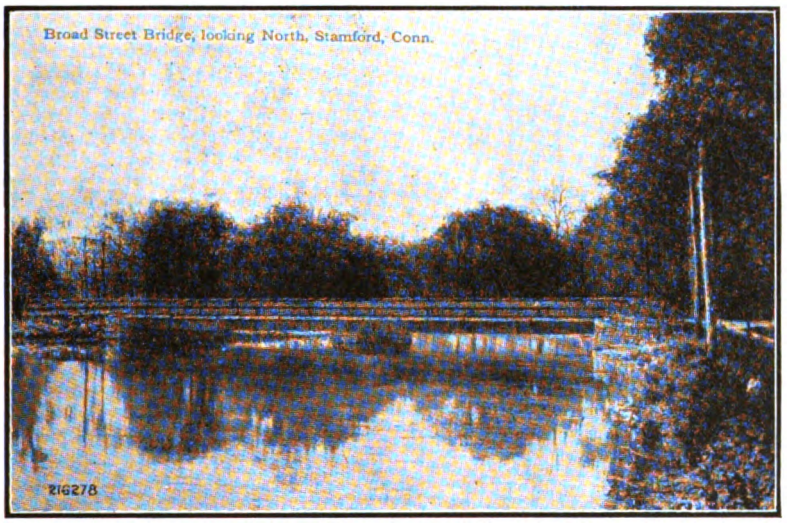
On the front cover of this number of the Journal, the reader will see a photo of the tall sumacs of New England. Those shown were planted in 1912 by Dr. Gates and were therefore only 4 years old. Three kinds are shown, of different height and blooming at different dates. No wonder sumac is a productive honey plant there. We have no such results in the Middle West although sumac is plentiful in spots.

The grounds about the Experimental Apiary of Massachusetts have been supplied with all sorts of honey plants and shrubs by Dr. Gates. The bees were working plentifully upon the clethra alnifolia and we were lucky enough to catch a pretty photograph of this.

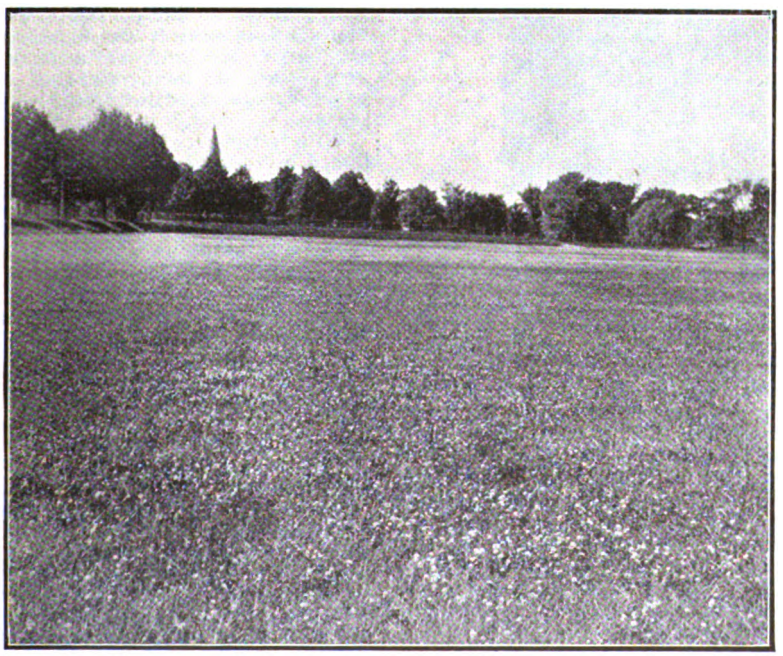
Two days later I retraced my steps in the direction of New York City, stopping on the way at Stamford, Connecticut, to spend the week-end with our old friend, L. C. Root, whom I have already mentioned in this tour and who had eagerly invited me to visit him. He was at the station when I arrived there.

L. C. Root, son-in-law of Moses Quinby, who was a contemporary of Langstroth, is one of the greatest enthusiasts I have ever had the good luck to meet. During his entire life, whatever he has done has been done with zeal and earnestness. He revised the "Mysteries of Beekeeping" of Quinby and the book is called "Quinby's New Beekeeping". For years he was one of the largest beekeepers of New York State. For the past 25 years, more or less, he has retired from active beekeeping, leaving his apiary in charge of his brother and settled in Stamford, living with his two daughters one of whom is a physician of note. He keeps only a few colonies of bees in the city, in the attic of his barn, where I saw them. But as energetic a man as he could not remain long idle. So he was entrusted with the duties of Milk Inspector for Stamford. He was the first inspector to prepare a bulletin in which each dairy was separately reported and its sanitary conditions carefully detailed. The result was a host of friends and some enemies, for the unsanitary establishments could not be pleased with a truthful record, while the mothers and housekeepers were thankful for the straightforward information which his bulletins gave.

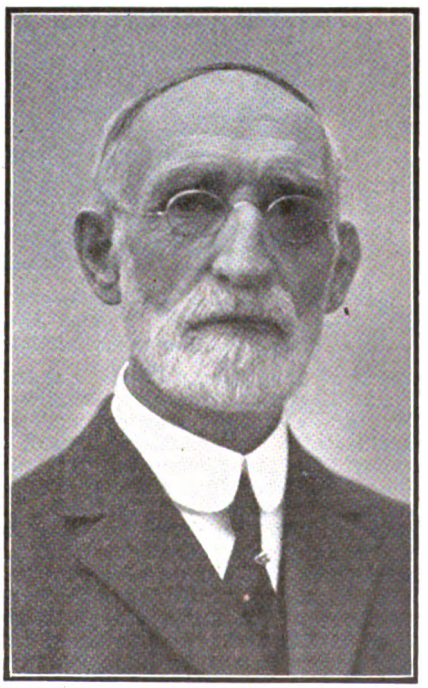
It happens that Dr. Root, L. C. Root's daughter, is the family physician of the H. L. Cooper people. Mr. Cooper is the world-renowned hydraulic engineer who built the big dam between Keokuk and Hamilton, across the Mississippi, the largest



A VIEW AT STAMFORD, CONN.



A FIELD OF CLOVER IN BLOOM AT AMHERST, MASS.



L. C. Root
Reviser of Quinby's "Mysteries of Beekeeping"

power dam in the world. His business office is in New York City but he lives at Stamford, and they are very intimate with the Roots. The building of the big dam in 1910-13 with which I was connected, during the years of its promotion, has caused us to become well acquainted with the Cooper family.

When she heard of my arrival, Mrs. Cooper kindly sent her big touring car for Mr. Root and myself to visit the suburbs. Stamford is only 35 miles from New York and is the home of thousands of "commuters", business men who want quiet homes for their evenings and holidays. It is on the shore of Long Island Sound and has beautiful resorts in healthy locations. We rode about its avenues until we accidentally reached Sound Beach, a suburb, and the home of our old friend E. F. Bigelow, editor of the interesting magazine "The Guide To Nature". He welcomed us heartily and showed us all about his place, a wilderness of 5 acres which he has allowed to go "back to nature" so that one might think himself away from civilization, when in the heart of it, were it not for the familiar sounds of a busy railroad center. Mr. Bigelow will be remembered by our readers as having furnished us some of the prettiest photos that we ever published. Several of them have appeared on the cover of the American Bee Journal in the past.

The three days I remained in Stamford were spent very pleasantly, in visits about the city, with Dr. and Mr. Root, a delightful Sunday dinner with the Coopers, at their home on one of the finest avenues, and long talks and reminiscences of old days with Mr. Root. He was 76 years old in December 1916, but looks 10 years younger. We have known each other for nearly 40 years and the reader may imagine how much we might have to say.

Concerning the distance bees will go for honey, L. C. Root once had a very interesting experience. He had 100 colonies about 7 miles from a heavy basswood harvest. The bees found it, but he thought best to bring about a third of the colonies up to this timber. The result was that these bees harvested about 3 times as much as those who had to travel the 7 miles. 40 colonies, in 7 days, secured 4103 pounds of basswood honey, so although Mr. Root positively knows that bees can and do go 7 miles for honey in an emergency, he believes in locating them as near the crop as possible.

I could have enjoyed a week or more with my kind host but all things must come to an end and on Monday I left for New York City. The following day, Tuesday, I rode up the beautiful Hudson River, to Albany, on the steamer "Washington Irving".

We live on the Mississippi, the "father of waters", and are proud of the great stream, but its scenery is tame by the side of the Hudson's. This stream which has only 6 feet of fall in 150 miles, from New York to Albany, is in spots fully 3 miles wide and flows between beautiful and high hills. The Palisades, on the New Jersey shore, shortly after leaving the City, are abrupt cliffs. Nothing like them in the valley of the Mississippi.

THE ARTIST HAS CAUGHT THREE BEES ON THE BLOSSOM OF THE CLETHRA ALNIFOLIA

As many as six bees were noticed on a single blossom t one time—(See page 85)

Wintering Problem Analyzed

BY J. E. HAND.

IN the mind of some beekeepers the idea prevails that bees are cold blooded animals that remain semi-dormant in winter, consuming little food and warming up occasionally to eat and enjoy a flight when the weather permits. While winter is a season of rest from outdoor labor there are certain activities within the hive, necessary for the comfort and safety of the colony. As winter approaches, bees cluster closely in a spherical form between the combs and thereafter the temperature of the colony is governed and regulated by the outside air through the expansion and contraction of said cluster. Cold weather contracts the cluster, thus conserving the heat that always radiates from bees, causing a rising temperature within the cluster. The colder the weather the closer the contraction, the more perfect the conservation of heat and the higher the temperature within the cluster. So the highest cluster temperature is likely to occur in zero weather.

Warm weather expands the cluster, releases the heat, and the cluster temperature falls to meet the rising outside temperature. It is thus that the temperature of a broodless colony in winter varies in response to external fluctuations, but in the transition to summer conditions after the dispersion of the cluster no such variation exists, and a uniform temperature of 92 degrees is maintained during the breeding season.

With strong colonies in well protected hives the minimum outside temperature and the maximum cluster temperature are practically synchronous, but with weak colonies in unprotected hives there is a lag between the maxima and minima of inverse temperatures ranging between hours and days, according to the numerical strength of the colony and its power to generate and regulate heat, and if repeated by frequent cold changes it is likely to result in the death of the colony. We feel justified in assuming that this lag is directly responsible for a large percent of winter losses attributed to other causes.

Aside from the slight action required to expand and contract the cluster from day to day, the winter activity of bees consists in their constant circulation throughout the contracted cluster presumably in search of a comfortable position, and fanning with the wings presumably to areate the cluster with fresh currents of oxygen. Bees cannot

remain long in one position either inside or outside of a contracted cluster, for those outside would chill and those inside would suffer with vitiated air; therefore, winter activity is the result of a contracted cluster.

Dr. Gates recognized these activities and recorded them in Bulletin No. 96. They are also recognized by Dr. Phillips, and recorded in Bulletin No. 93, as a process of external heat generation by muscular action, but the deductions drawn from experiments recorded in the bulletins mentioned warrant the conclusion that heat generation is an internal, incessant, involuntary process. The consensus of opinion is that cold weather causes increased activity and increased food consumption, and increased food consumption causes increased heat generation.

Expansion and contraction of the winter cluster is the basic principle of the heating problem, and the sum and substance of heat generation so far as relates to the activity of the bees. These activities have a devitalizing tendency, and the only remedy is to eliminate the contraction of the cluster by raising the temperature of the winter nest to a point that expands the cluster. This is accomplished by extreme contraction and internal insulation of the winter chamber, thus eliminating the cold zone and conserving the heat that always radiates from bees.

It cannot be accomplished with heavy packing on the outside of a non-contracted hive any more than one can keep warm in bed with the blankets spread on the roof; in either case the heat is lost by diffusion with the surrounding atmosphere, and the patient is chilled to the marrow by currents of cold air untempered by a heated chamber. A cumbersome winter case with heavy packing surrounding a thick-wall non-contracted hive will do for cold storage, but these are not the qualifications that should recommend a competent wintering hive when heat conservation is imperative. Extreme contraction is the most potent factor, except the food supply, and the wise beekeeper will supply ample stores of food and contract the winter chamber to conform to the compass of a winter cluster and surround the contracted chamber closely with porous packing, thus eliminating the cold zone and conserving the heat.

In this ideal condition bees will maintain a comfortable expanded cluster free from compulsive activities, will consume food moderately and come out in spring strong in numbers and vitality. The convertible principle solves the problem at a cost of 40 cents for extra equipment.

Birmingham, Ohio.

Taking Care of and Moving Winter-Sheds

BY G. C. GREINER.

WHEN I planned the use of winter-sheds with suitable packing as a means of better outdoor wintering, some 16 or 18 years ago, I was inclined to think that housing them during the summer would be necessary to materially prolong their service. To facilitate handling and to store them in as small a space as possible, they were made collapsible. All parts, sides, ends, tops and bottoms, could with little trouble be separated and re-adjusted as desired.

Housing them proved to be a heavy task, repeating itself every year. The advantages seemed out of proportion to the time and labor spent. All my hives, although constantly left outdoors, with proper care lasted a lifetime, and to judge from all appearance would last another, and why should my sheds not do the same? They were well made, special care always being taken to have their roofs in perfect condition, waterproof, and otherwise constructed with a view to resist the inclemencies of the weather. Taking these points into consideration I decided, some 12 or 14 years ago, to store them outdoors.

But this did not entirely eliminate the handling of the sheds. If we unpack our bees for the summer and place them on separate stands, which must be done to have free access to them, the sheds have to be moved back and forth from their storage ground to the summer stand of the bees in the fall, and back again in the spring. As I have no helper I always considered this the most tedious feature of the whole season. To overcome the difficulty I used a couple of 6 or 8 inch rollers, picking up the back one, when clear, and placing it in front to continue the transit. This mode of locomotion answered the purpose except that it was too slow. For years I had planned to construct a car or rig for this special purpose, and the only reason why my plans had not materialized before, was the lack of suitable wheels.

Last fall, just before putting my bees into winter quarters, I happened to run across a castaway two-wheel garden-drill, and the accompanying drawing, Fig. 1, is the result of my find. I have used the rig only one season, but I am so elated over its usefulness that I consider it one of my best time-saving tools. The drawing shows a shed on the move.

Figure 2 gives the frame without wheels; *a* is the platform made of 2x8-inch yellow pine, with a wooden block: *b*, on the underside of each end to hold a ½-inch steel rod for an axle; *c c* are the handles, 2x4 inch of the same material; *d* is the combination swing shelf that answers three distinct purposes; first, it supplies legs to the handles; second, it forms the connecting link and gives stability to the frame, and third, it carries the back part of the transported shed. It is made of a piece of medium heavy wagon-tire and swings on bolts in the handles. Almost

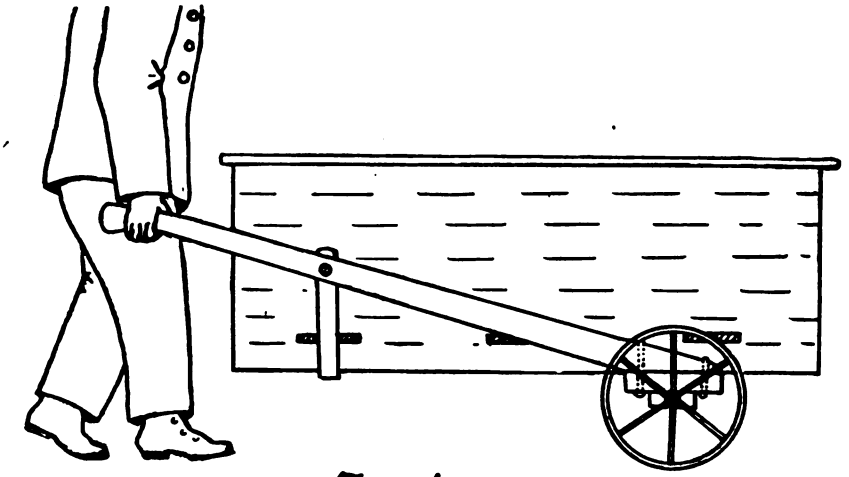


Fig. 1.

MANNER OF PLACING THE CART

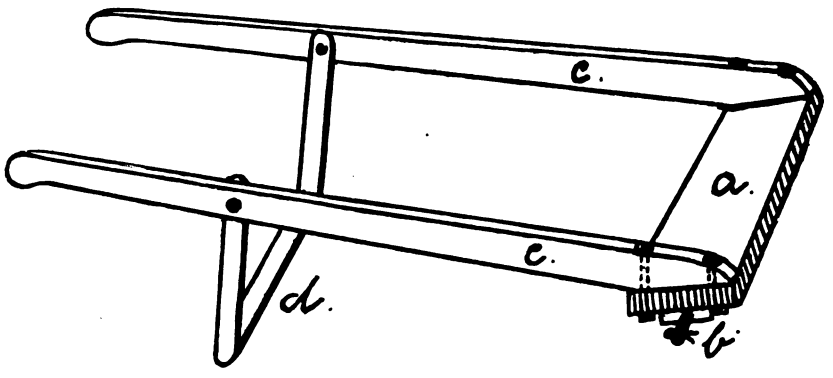


Fig 2

THE CART UNDER CONSTRUCTION

any rubbish-pile will furnish the material.

To load the shed is a simple affair. The car is run to the front end of the shed (See Fig. 3), with extended shelf lying on the roof, and when the car is pushed under the shed as far as the front-blocking, the shelf (with handles) drops automatically to the ground. It is then swung under the shed as in Fig. 1, and the load is ready to move.

From the foregoing the reader may infer that I favor the single-row-principle shed or case for winter protection; not because I consider them any better or safer for wintering than the quadruple or single colony case, but they are by far the most practical, time-saving style of the lot. In the course of the season miles of unnecessary steps are saved by their use. Our school-days' teachings, "A straight line is the shortest distance between two points," fits the case admirably. It is always one step to the next hive, while the quadruple case necessitates continual walking from one side to the other, and that right in front of the hive entrances. This has a strong tendency to irritate bees, and no doubt some of the cross-bee complaints, of which we hear occasionally, have their origin in this malpractice.

When using the wheelbarrow for the transportation of supers and other paraphernalia to and from the honey-house, this straight line principle is a great convenience.

La Salle, N. Y.

Feeds of Bees

BY W. K. MORRISON.

SEVERAL of your correspondents have referred to substitutes for pollen. Some advocate wheat or rye flour, not knowing of course that the albumen content is much too low to be a good substitute for pollen. Pea flour is far better in every way and probably lentil flour is better still. I think the Italians sometimes use lentil flour as a pollen substitute. Bean flour made from "broad beans" has also been used with good results. It is probable that a flour made from "garbanzas" or chick peas would be better than anything yet suggested, as the flavor is very fine. Those living along the Mexican border could try this. It looks as if cane sugar is gaining all along the line as a substitute for honey in feeding bees. Mr. Arthur C. Miller highly recommends a well-known brand of *cane* sugar which has been before the American public for many years. *It cannot be made from beets.* It has often been recommended in the bee journals before.

The late Paul Mickwitz, of Finland, wrote an article praising *beet* sugar as a bee feed, and citing some experiments of his own in proofs of his claims. As a matter of fact he was using an invert sugar made from *cane* sugar which has been made quite extensively for some years by a firm in Hamburg, Germany. It is made in the form of a syrup and is certainly very fine. It is ahead of anything sold in this country for feeding bees. In fact, it is a fair substitute for honey, and when fed to bees baffles all but the very best chemists in Germany to detect the difference between it and real honey. It contains some other things besides invert sugar. It has given the beekeepers of Germany considerable trouble because some smart beekeepers fed it to increase their honey crop.

It is made in Hamburg because that city is a free port. Germany prohibits the sale of *cane* sugar to protect the beet sugar growers. It allows the manufacture of invert sugar from cane however under certain conditions. In the manufacture of condensed milk *cane* sugar alone can be used, so that, even in countries prohibiting cane sugar they have to allow an exception in this case.

Beet sugar has often been tried as a substitute feed for bees with poor results. Some people say cane sugar and beet sugar are alike. Uncle Sam has something to say about that. He will put you in jail if you sell beet sugar and say it is cane sugar. *Cane* sugar always sells for more money than *beet* sugar; pretty good proof that it is better.

In southern California both kinds are sold, but *cane* sugar is preferred for many purposes, notably fruit preservation. The leading canning factories all use cane sugar, and housekeepers of the discriminating kind all use it, even paying one-half a cent a pound extra for it. For feeding bees its value is even greater. The Western Sugar Refining Company of San Francisco put up a brand of cane sugar which they call "Fruit Sugar," and this corresponds very closely with the sugar Mr. Arthur C. Miller writes of.

Not all cane sugar is good for bees. Brown or Muscovado sugar is not good because it is burned in the process of making. It is only made now because it is used in some kinds of cookery and because it produces much "black strap" molasses. The "lumber jacks" in the northern woods like this molasses for two reasons, it is "heating" and it is laxative. The laxative effect is due to sulphur.

The best sugar of all for feeding bees is a yellow colored cane sugar known as "vacuum pan" sugar because it is cooked in a vacuum, thus preventing burning.

Very white sugar is not good because it has been bleached by the action of very powerful chemical reagents. Traces of these are left in the sugar, which the bees seem to feel. This may explain the failure of some to get good results in feeding.

Beet sugar is *always* so treated; moreover blueing is put into it for the same reason that women use it in washing clothes.

Dr. Wiley had his eagle eye on this phase of the sugar business, and that is one reason why he had to resign his position, as the sugar trust is very powerful politically. Yellow cane sugar (vacuum pan) can usually be purchased on the Atlantic Coast. The larger the crystals the finer it is in quality. It is very sweet.

Farther inland you can protect yourself by dealing with reliable firms, not the ones who say *beet* and *cane* sugar are alike. Montgomery Ward & Company sell only cane sugar. They will guarantee you that they sell no beet sugar, and many first-class grocery firms do the same. As a matter of fact all efforts to make a nice syrup from beets have failed.

Great Britain and her colonies are familiar with a fine cane syrup which is known as "Golden Syrup." The South produces excellent cane syrup by a simple process. Porto Rico used to furnish a large quantity of *Mallowe*, which was very good. Barbados produces its famous "sling," and all the cane sugar countries produce something nice in this line. These all make excellent bee feed, but are usually too expensive, as they contain water on which freight has been paid.

Of all the extraordinary things credited to the present great war in Europe is the astounding discovery that Europe now produces 8,000,000 tons (long tons at that) of *cane* sugar. Yes! *cane* sugar. This will cause Emperor William to rub his eyes in profound astonishment, if not in glee. This is the sample of the stuff we are to read nowadays. As a matter of fact the war will have the effect of increasing the production of cane sugar and decreasing beet sugar

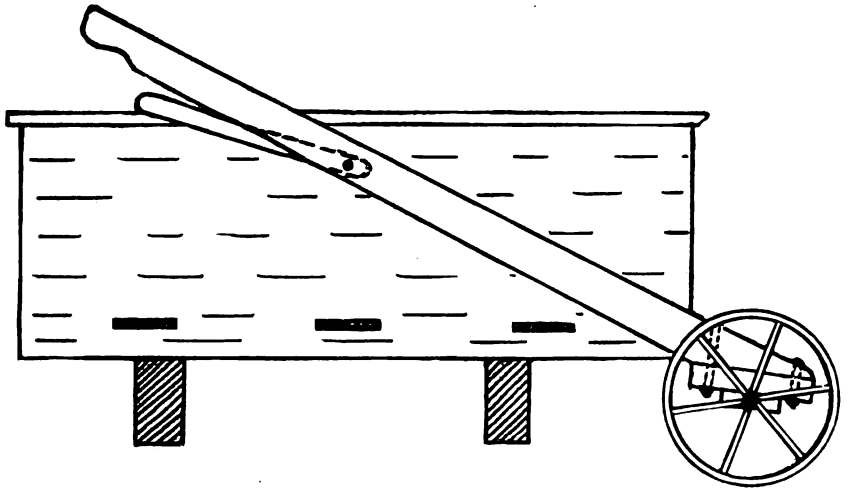


Fig. 3.

HAULING A HEAVY SHED WITH A HOME-MADE BARROW

for some time to come.

It is too soon as yet to prophecy as to sugar prices. Part of the beet crop will be lost, but part of the demand will also be cut off. Cuba, Java, San Domingo and other tropical lands can readily increase their output of cane sugar, and the beet crop being largely a woman's crop will not decline so quickly as some suppose.

[We have many readers in Europe. We would like to ask them about their experience in this matter of cane sugar *vs.* beet sugar. We are under the impression that the difference in results is light.

As to flour and meal for artificial pollen, our bees have accepted all kinds, in times of shortage. Can our readers find any difference in results? —EDITOR.]

No. 3.—Seventy Years of Beekeeping

BY THE EDITOR.

THE third discovery which brought about a revolution in beekeeping was that of the extractor. It had long been realized by practical beekeepers that the excessive cost of comb to the bees made desirable a method by which the honey might be emptied out of the comb and the latter returned to the hive to be filled again.

It was in 1865 that Major Hruschka, of Dolo, near Venice, in a part of Italy formerly under Austrian rule, made the accidental discovery of the possibility of throwing the honey out of the combs by centrifugal force. The manner in which this discovery was made is well known. He had given his little son a comb of unsealed honey in a dish to be carried home. The boy put the dish in a basket and playfully swung the basket around him, forcing a part of the honey out of the comb into the dish. The first extractor made contained only one comb at a time. But about the year 1867, the invention was sufficiently developed to become of general use in this country. The first description of this useful machine, given in the United States, was by Father Langstroth, under the name of "Honey-emptying machine," in the American Bee Journal, April, 1868, page 189. In November of the same year, Chas. Dadant suggested, in place of this clumsy appellation, the name "Melextractor," and it was not until March, 1870, that the name "honey extractor" began to be used. In that year the enthusiasm of the beekeepers got the better of their judgment, or else they had not yet learned that honey must be ripened before it is extracted, as from all sides came reports of wonderful yields. A. I. Root, under the *nom-de-plume* of "Novice," reported in the August number, page 32, having filled all the available jars, pans and wash boilers, and seriously contemplating "scouring out the cistern and filling that, too, if the Italian bees were willing." Within a year or two, all the honey producers learned that unripe honey will not keep and that offering such a product on the market will endanger the sale of good ripe honey.

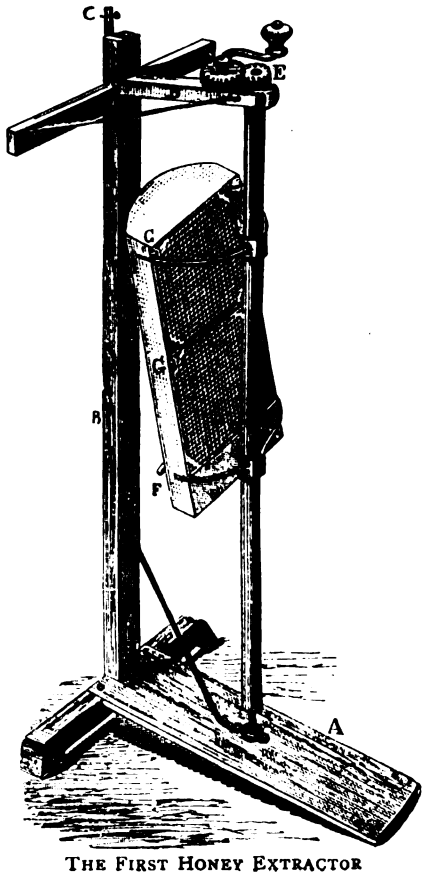
One of the first honey extractors to be manufactured for sale was the Peabody extractor, invented by J. L. Peabody, the can of which revolved in sockets at both top and bottom of the wooden frame, the baskets being immovable, on the same principle as the original invention, like the Dubini extractor shown in cut.

About that time, such queen-breeders as Langstroth, Alley, Gray, and

HAMET SMOKER

others began to experiment on sending queens by mail. But the food used was honey soaked in a sponge and fastened in reach of the bees by a piece of wire-cloth. S. J. Parker, M. D., of Ithaca, N. Y., gave the description of this cage in the January, 1869, number of the American Bee Journal, and stated that he had received a queen in such a package safely, from Henry Alley, 450 miles from him.

At this point it is well for us to make



THE FIRST HONEY EXTRACTOR

mention of a writer, beekeeper and manufacturer of bee-supplies whose work is contemporary with the past 60 years, and who is still at the head of a thriving bee-business. We mean E. Kretchmer, now of Council Bluffs, Iowa. His first article on bees, as far as we can ascertain, appears in the American Bee Journal of February, 1870, but he was then already a man of extended experience. He had successfully sent a queen by mail to Stockton, Calif., as early as 1866.

Mr. Kretchmer was born in Germany, not far from the home of Dzierzon, and in 1856, when his father made him a present of a colony of Italian bees, he went to Dzierzon for information on how to rear queens.

Coming to the United States a little later he served in the Civil War. He

THE PIONEER ADAM GRIMM

purchased Italian queens of the Parsons importation, and says that he was the first man to rear Italian bees west of the Mississippi. In a private letter to us, he writes:

"A little incident which happened at the Iowa State Fair, in Burlington, shortly after the Civil War, brought me forward unexpectedly as a writer on bees. A man from the East was selling little vials of liquid as a so-called 'bee charm' at $1.00 per bottle and within his hearing I made the statement that I could handle bees better without the charm than with it. I was promptly challenged and a crowd gathered. In order to prove my assertion, I obtained permission from another exhibitor who had some bees, and by using a little smoke quickly subdued them in less time than it took the Professor to do so with the charm that he used on his lips. Newspaper reporters were present who exaggerated the occurrence in the write-ups, and I was shortly besieged by a number of parties who asked me to explain my management, and in the spring of 1865 I published a little pamphlet in the German language entitled, 'Winke Fur Bienen-Zuchter,' which was followed by my 'Beekeepers' Guide Book.' Soon the question arose what hive I used and where they could be obtained. This made it necessary for me to start in the manufacture of hives, and I have been at it ever since."

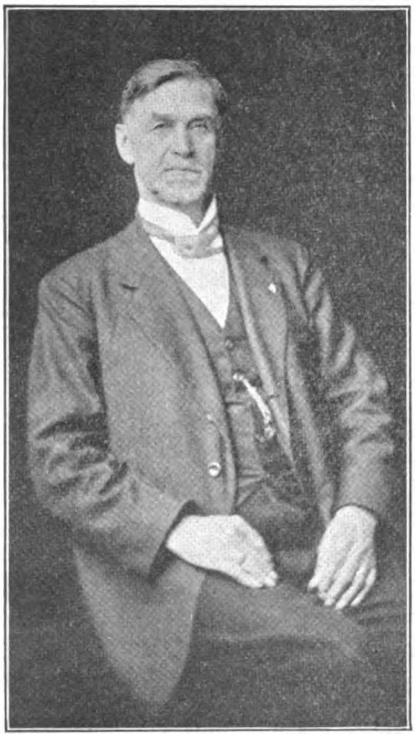
Mr. Kretchmer's first circular is dated 1865, and we have before us one of 1875, his 10th annual circular, in which he offers for sale hives, smokers, veils, extractors, etc.

If any of our readers wonder why we

give one man so much room in these reminiscences, we will answer that there is not another man living, to my knowledge, in the bee-business in any part of the world who can show as long, as steady and as active a record as Mr. Kretchmer, the next one to him being our old acquaintance, A. I. Root.

Beekeeping began to be considered as a possible profitable occupation when Adam Grimm, in the June, 1871, number of the American Bee Journal, made a report of $5,742.80 secured in honey, queens, beeswax, and increase of colonies during the previous year. He was then selling 240 colonies of bees for shipment to Utah for $2450.

In 1872, Samuel Wagner, the editor, died. His son continued the publication only a few months longer, and in January, 1873, Rev. W. F. Clarke assumed the management of the maga-



E. KRETCHMER

zine. He retained it only about a year, when Thomas G. Newman became manager, and later proprietor and editor.

Meanwhile, beekeeping in Europe was progressing also. The American methods, described and praised in the French publications by Charles Dadant, very soon overcame the stubborn opposition of the obstinate Hamet, who at first called Mr. Dadant "an American Barnum." The flood of progress compelled him to accept the modern hives as well as the honey extractor, which he had first ridiculed as a "useless toy." This writer would not be worthy of mention had he not been a practical teacher in the management of straw-skeps and the publisher of an influential bee-magazine, still existing, although Hamet has been dead many years. Charles Dadant wielded a ready pen, and his criticisms of Hamet in the European periodicals of that day were appreciated on the Continent.

In Switzerland and Italy, beekeeping also made great strides. The Italian journal "L'Apicoltore," began its publication in 1868, with strong support of the new methods. For that reason beekeeping in Italy has long been practical among the educated classes.

In the year 1872, an open and bitter fight was made against the doctrine of parthenogenesis by an Italian curate, Parroco Giotto Ulivi. It lasted until 1880, and was based principally on ill-made experiments. From time to time, even in our day, adepts are found who sustain the opposition to a doctrine which is now a well-proven fact, and try to establish the theory that sex depends upon the food supplied to the hatching larva. Ulivi was irate and abusive. His doctrines have never been taken seriously by the students.

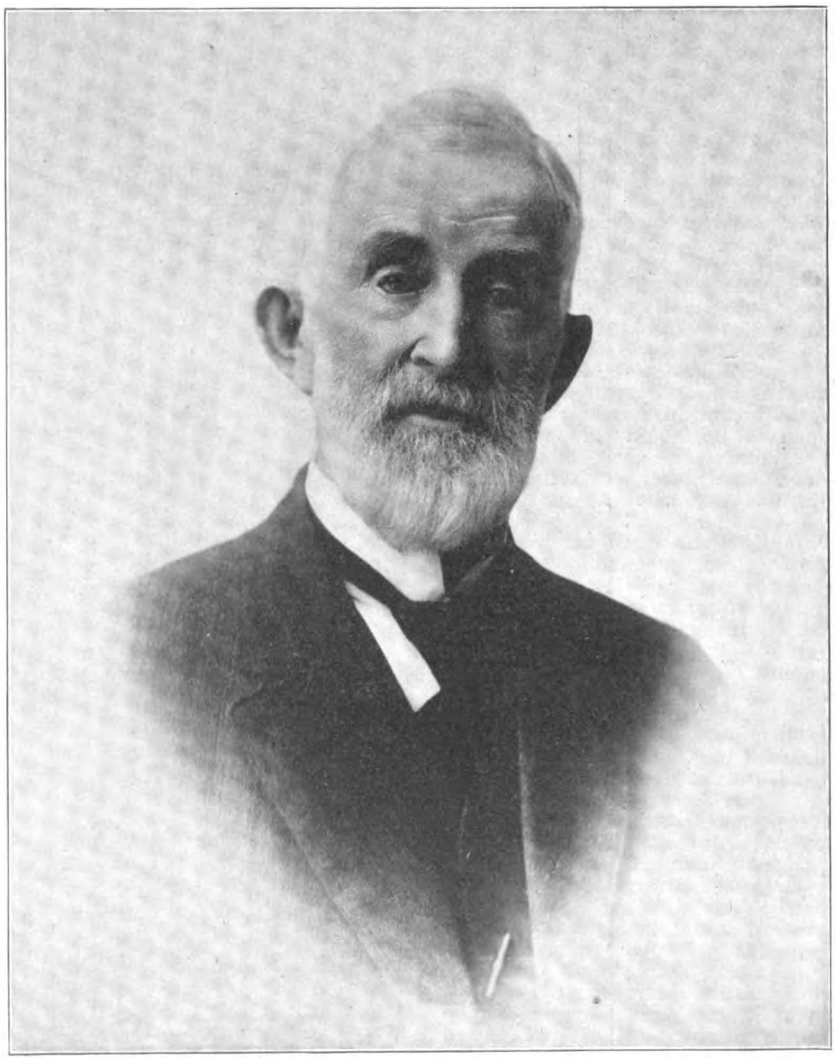
In England, the British Bee Journal began in 1873. Although some of our British cousins have been unwilling to acknowledge the beneficial influence of American ideas, many readily concede the practical help secured from us in results.

About 1873, Moses Quinby devised the "bellows smoker," on which he later made improvements. (See Quinby's "New Beekeeping" by his son-in-law, L. C. Root, page 90.) This implement was a great help to the easy handling of bees.

A few years later T. F. Bingham invented the "direct draft" smoker which has some very good points, but the principal part of it was a copy of the Quinby smoker. So the original credit must be given to Quinby. Up to his day the bee-smokers were clumsy affairs for the use of which both hands were needed. The Germans, however, already used a large pipe with tobacco, for smoking their bees. Up to this day, nothing is used but the pipe or a cigar in many parts of Germany and Switzerland.

The one-pound section now used so universally was the result of divers attempts at the production of honey in small frames. The first boxes used by Langstroth were square 5-pound glass boxes which allowed so little ventilation that the bees did not work in them readily in hot weather. Then, in the early seventies, patents were granted to several inventors of sectional boxes, the leader among them being Gen. Adair, of Kentucky, who was at that time the publisher of "The Annals of Bee Culture." His super box was composed of frames, the top and bottom bar of which overlapped on the end bars to form the box, held together by a wire, with glass at both ends.

In 1873, Kretchmer was granted a patent on a honey-box "consisting of little frames holding about a pound of honey which were clamped together with strips of tin folded at right angles,



THE LATE JOHN HARBISON, OF CALIFORNIA

with a sheet of glass on one side. Harbison, the largest honey-producer in the entire world, who landed the first bees in California in 1857, used a small honey section as early as 1869, but it was quite heavy. About 1877, Forncrook, of Wisconsin, patented a folding honey section, but as it was a copy of other folding boxes the patent proved worthless and the one-piece section came into general use.

Although it is a mistake to give fuel to our national self-esteem, which is already as great as that of any other nation, we cannot help taking note of the promptness with which America seized the discoveries made in the Old World and improved upon them. The honey extractor, for instance, invented abroad, was used largely in this country and very practical machines were made of different patterns, while even in the country where the idea of centrifugal extraction of honey was discovered, the honey extractor remained for years very primitive. The cut which we give of the original machine, is borrowed from Dubini's "L'Ape" (The Bee) under date of 1881.

The result has been that after we borrowed the European inventions and improved upon them, they in turn have borrowed our improvements and our practical methods and implements.

In 1872, Charles Dadant went to Italy to import queens on a large scale. But his trip was a failure as far as immediate returns were concerned. However, he learned much during the trip and in two years later succeeded, in connection with Fiorini of Monselice, in importing queens safely. Hundreds were imported each year for several years. They were still sent by express, with one comb of white honey and one dry comb in each little box about 3½x5 inches. About 50 to 75 field bees were put in the box with the queen and *no water given.* Water was found worse than useless except in hives rearing brood. Nowadays the greatest losses are probably caused by the bees being suffocated while in the mail sacks. The Fiorini packages were made of 22 boxes, in a pyramid shape, with cushion on the underside and air openings all around. Stifling the bees was out of the question.

Some of the veterans of the present day beekeeping, besides the ones already named, are to be first found during the years 1868 to 1876. In October, 1870, appeared the first article of our own Dr. C. C. Miller. It was on "Queen Introduction." Doolittle's first article was in the very next number, November, 1870, and as might be expected by his friends today, it was on the same subject. One of our modest eastern beekeepers, W. D. Wright, had an article in the January, 1871, number on "Two Queens in One Hive."

Men who have long disappeared were well-known writers then, Alley, Gen. Adair, Chas. Muth, Elisha Gallup and Prof. A. J. Cook. The last named writer should also be credited with the first teaching of beekeeping in an Agricultural College, that of Michigan, in 1871. He was also the original promoter of a Congress of American beekeepers, the first meeting of which was held in Indianapolis in December, 1870.

MR. WM. CRAIG, OF LUCE, MICH., PRODUCED 2100 POUNDS OF EXTRACTED AND 600 POUNDS OF COMB FROM 30 COLONIES
20 of these colonies were built up from pound packages in the spring

Combless Packages

BY A. G. WOODMAN.

OUR experience with the combless bee package has been varied. Some of the packages came through in excellent condition and gave very good results, while others were a complete failure. The first sixty 2-pound packages that we received were almost a complete loss, principally on account of the shipper not using cages large enough. The queens for these bees were also shipped separate from the package, and as the weather was cool, there was considerable loss.

The first ten 3-pound packages came through in excellent shape, hardly a bee being dead. They were placed in hives and each given a 5-pound pail of honey with a few small holes punctured in the top of the cover, acting as a France pepper-box feeder. They gave us excellent results, some of them producing as high as 150 pounds of surplus honey or the equivalent. By equivalent, I mean increase of new swarms, their energy being diverted from the production of honey to increase.

We had a number of 3-pound packages that came in after this shipment that did not do as well. One of the great troubles was poor queens. The package after being in the hive for a week or so would be found queenless or the queen would not be laying as she should. The loss that we had from these causes would have made the venture as a whole unprofitable.

We consider, however, that this difficulty can be overcome. It lies entirely with the shipper in the South. If he will take due precaution in selecting his queens and putting the bees up for shipment, there is no reason why they should not arrive in the North in first-class condition and give excellent results under normal conditions.

There has also been some trouble on acount of the size of the shipping packages. A package that would be plenty large in cool weather would not be large enough should the weather turn warm. For this reason it will always be well to use extra large cages. We have had them come through with water and without and can see no difference.

Grand Rapids, Mich.

My Experience in Purchasing Bees in Pound Packages

BY F. L. BARBER.

I HAD heard considerable discussion on this subject, some favorable and some otherwise, so I decided to try the experiment for myself, and my experience has led me to believe that no professional beekeeper who may have good hives and equipment on hand can afford to allow them to stand idle during the season, although I realize that all who order bees in combless packages from the South may not have as good success, or that I might not have as good luck another time.

Some of the things that will contribute to the success or failure of a venture of this kind are first: time of arrival and a reliable man at the other end of the line. Next, it is necessary to secure good bees with good queens. I believe one should be careful about giving a large order to an entirely new man, unless he furnishes satisfactory reference and guarantees pure stock and safe arrival.

Early last spring I ordered from the South combless packages with untested queens at $2.50 per package. These were to be delivered between May 1 to 10; safe arrival guaranteed. May 10 arrived but no bees. At this season of the year time is precious to the beekeeper, but I received a letter from the dealer, saying he would ship them in a few days. As it turned out, it was well that they did not arrive at the time stated, for we had a snow storm May 10. They arrived the 20th, the weather was warm and fruit trees were just blooming. The cages arrived in good shape with but few dead bees. The cages containing the queens were fast-

ened to the top of the packages, so the bees could cluster around the cages. Twenty of these I placed in hives containing frames of empty combs, a few of them containing a little honey. Some were hives in which the bees had died last winter.

As the weather was warm the bees went right to work on the fruit bloom, and I did not find is necessary to give any feed, only what little honey there was in the combs. As an experiment I placed the other five in hives containing only full sheets of foundation and gave no feed. In a day or two I examined and found all the queens laying but two, which were missing. I wrote to the dealer and he immediately sent me two queens to replace those that were lost.

This was a great satisfaction to me. The colonies built up fast, and on June 25 I gave comb-honey supers to the 20 that had been hived on empty combs. The clover flow came about this time. They went right to work in the supers, and on July 5 I found it necessary to add another super on all but one of these. One colony swarmed on July 4, and as I had clipped the queens, I found and caged her and placed the cage in a new hive containing full sheets of foundation, which, after removing the old hive, I placed on the same stand, and the bees ran in and took possession.

Fifteen colonies finished two supers each, and four of them finished three supers, and each super contained 28 sections. The five that were placed on full sheets of foundation made very little surplus honey, but built up well and took in plenty of honey for winter stores. So I have from the investment 26 colonies of bees in good condition for winter, and enough surplus honey to pay for the first cost of the 25 pound packages of bees. Figuring the 26 colonies at $5.00 each gives me $130 for my work besides the experience which is worth something.

Lowville, N. Y.

Some Ingenious Appliances in a Queen Yard

BY E. G. LE STOURGEON.

MR. B. M. CARAWAY, of Mathis, Tex., has an interesting system on queen-rearing and mating. The nucleus or mating-hive is one-half the size of a 5⅜-inch ideal super. The frames are made by cutting an ordinary shallow extracting frame in half and using two more end-bars to complete the two frames. One advantage of this size of hive and frame is the ease with which it is possible to have combs built in a regular hive and stores of honey, pollen and brood secured for the use of the nuclei of mating hives.

For this purpose a super is divided into two equal compartments by a transverse bar with a beespace at the bottom and low enough from the edge of the super at the top to provide a rest for the end-bars of the 20 half frames. Figure 2 shows a super thus equipped with 16 frames and 4 division-board feeders.

As shown in Fig. 3, they are more than feeders. The block used for a top-bar is of two-inch material plowed out like the hand grip on the ends of hives. Below this block, for the remaining few inches of the frame depth, a sheet of foundation is inserted and comb drawn out to augment the capacity and storage room of the nucleus. In times of dearth, or when stimulative feeding is advisable, feed can be daily

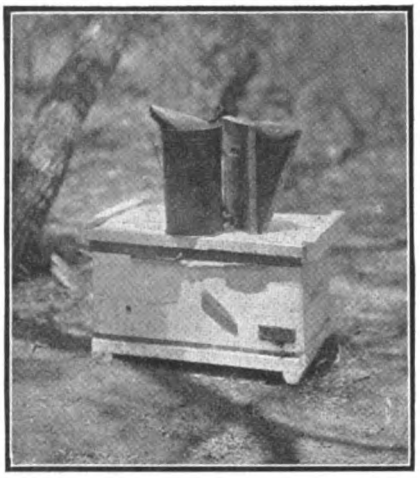


FIG. 1.—ONE OF CARAWAY'S MATING HIVES

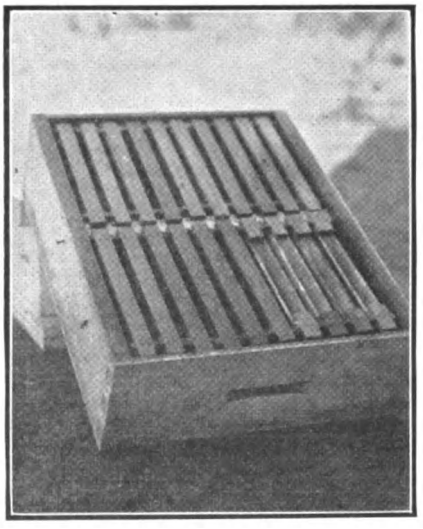


FIG. 2.—SUPER FOR SURPLUS HONEY, DIVIDED FOR QUEEN REARING

FIG. 3.—FEEDER FRAMES
Note indicators on the nucleus entrance below

poured into the groove at the top through a hole left in the inner cover of the hive for the purpose. The cells are reared in strong colonies, in removable wooden cell-cups.

Two ingenious devices used by Mr. Caraway struck me as being of peculiar interest. The first of these is what he calls his "safety valve," and the other he styles "the incubator." They are both shown plainly in Figs. 1 and 3. The safety valve is the entrance device. The mating hives have no entrances at the ends, but entrances are bored ¾-inch holes in opposite corners of the hive-body. A small block also having a ¾-inch hole in one end is nailed just above, so that it can be swung around. Thus the entrance can be wholly or partially closed or left open at will. A small square of queen-excluding zinc is nailed across the hole in the "door" or swinging block, and when this block is placed so that the hole in it engages the entrance of the hive it prevents the issuance of the queen. Thus, as soon as the young queen is mated the "safety valve" can be closed and the queen-breeder is sure that a swarm will not issue.

The indicator is as simple as the safety valve. It is an arrowhead—shaped piece of thin wood. Those I saw were made of one-half the side of an ordinary section, sharpened at one end. They are fastened with a small nail driven in tightly, but which permits the indicator to be swung around in a circle. The position of the sharp end or "hand" shows the condition of the hive. The arc of the circle is divided into sections similar to the points of a compass, each section indicating a step in the progress of queen-rearing within the nucleus.

This system saves unnecessary opening of the hives to determine their condition. Upon visiting the mating yards a glance will suffice to show what hives need attention and what is to be done with each of them. The finger of the indicator tells it all instantly. It can be moved about more quickly than a memorandum could be made, and as it is a permanent part of every mating hive it cannot be misplaced.

San Antonio, Tex.

Problems of Bee-Inspection

BY FRANK C. PELLETT.

I MUST confess that I have modified my views concerning bee-inspection each year of the five that I have served as State Inspector of Apiaries of Iowa. New difficulties presented themselves each season while some of the former ones became simplified. I have at last concluded that we have been working along wrong lines and that the plan now in operation in most States is not calculated to bring the best results, with the small appropriations available.

In the beginning, the appearance of foulbrood diseases was a matter of grave concern to the beekeeper. Little was known about either form and methods of control were not certainly understood. Practical men had found that by removing the bees to the new and clean hive and destroying the old combs, including brood and honey, the infection was frequently eradicated.

The beekeepers were poorly organized and were slow in bringing their

needs to the public attention. As a result both European and American foulbrood spread in most of the northern States before a serious attempt at control was undertaken. All the laws for the control of bee-diseases with which I am familiar are similar in their general provisions. The sole idea seems to be to give a State officer authority to examine all the colonies in localities where disease is known to be present, and by the use of a rigid rule insist on the treatment or destruction of the diseased colonies. Had prompt and decisive action been taken when the trouble first appeared it might have been stamped out as foot and mouth disease seems to have been.

The first and greatest difficulty which an inspector meets is to cover thousands of square miles of territory in which are located thousands of colonies of bees with an appropriation not sufficient to cover 20 percent of the territory efficiently.

Next to the lack of funds with which to follow the directions laid down in the law, the next great problem is to get men who are familiar with bee-diseases and who have had sufficient experience in dealing with the public to enable them to do efficient work. In most States the work is paid for on a *per diem* basis. There is a rush of work for a few weeks during the honey harvest and nothing to do the rest of the year. When a man is competent to do the work of an inspector, he can earn several times as much for the same time spent in an apiary of his own, so it is necessary to be constantly educating young men who are willing to spend their vacations in this work for the experience gained.

One who has not been responsible for such work, under such conditions, can hardly realize the amount of irritation that is constantly arising because of mistakes of one kind or another. As soon as a man becomes trained to do the work, in an efficient and satisfactory manner he is sure to find a more attractive opening elsewhere.

Much tact is required to deal with men who know little about bees and care less. In the average locality where inspection is new, the inspector will find men who don't believe that bees are subject to such disease as foulbrood; men who defy his authority and dare him to come on the premises; men who regard the inspector as a grafter, and believe that the office was created by the politicians for the purpose of providing him with a job, and last and often rather infrequently, men who want to learn something about bees and who welcome the inspector with open arms. If all were like the last named, inspection would be a real joy, but to convince the others that it is to their interest to take advantage of the services of the inspector, and that they will not suffer because of his presence requires much diplomacy. A man must never be in a hurry, must never be arbitrary, yet must be firm. I have become fully convinced that the police powers for the purpose of enforcing the provision of the law should be in the hands of some other officer. The mere fact that the inspector is given such power adds greatly to his difficulties. Knowing that if disease is found the inspector is authorized to demand

COMPARATIVE SIZE OF MATING AND REGULAR HIVES IN THE APIARY OF B. M. CARAWAY

the destruction of the diseased colonies makes the uninformed dread his coming and place every possible obstacle in the way of having the bees examined.

I might extend this paper to great length by outlining in detail specific instances of such problems as above enumerated, but the facts will be too apparent to require extended discussion. The real problem after all is to find a remedy that will meet the trying conditions. There seems to be little permanent value in the work of the inspectors aside from the education that comes to the individual beekeepers as a result of the personal contact. Even though sufficient appropriations of funds and sufficient trained men could be secured to stamp out foulbrood from any single State, the chances are that it would not remain free from the contagion for a single year. The fact that it is present in all the northern States, and most of the southern ones as well, makes it improbable that the disease can ever be permanently eradicated. It very frequently happens that an inspector will be congratulating himself upon the fact that by thorough work in a given locality he has cleaned up the disease, when lo! it suddenly appears again with a shipment of honey or bees from some outside location.

Since all are agreed that the problem is one of education, why not make it an educational problem instead of a quarantine regulation? When an inspector goes into a locality and is required to examine all the bees there, entirely too much time and money is required, considering the limited resources available for the purpose. Apiary demonstrations, such as are now held in Ontario under Prof. Morley Pettit, would seem to be much more efficient. If the beekeepers of the surrounding country are invited to spend a day in an apiary where disease is present, much more can be accomplished toward the control of foulbrood. All who take sufficient interest to atttend the demonstration can be shown disease in its various stages, and also how to treat each colony as its condition demands. Thus, in one day 10 to 50 persons can be given actual instruction in recognizing and treating disease, instead of spending the same amount of time in examining the colonies in one large apiary. Under present conditions the inspector does not have time to give each man visited sufficient instruction to enable him to care for the diseased colonies properly, and it often happens that the inefficient owner will not understand directions correctly and will spread the disease instead of checking it.

In my annual report which has recently been filed with the governor, I recommended that the present office of State Inspector of bees be abolished altogether. In its place I have suggested that a man be employed on full time in the extension department of the College of Agriculture for the purpose of holding apiary demonstrations as above mentioned, during the summer months, and lecturing on marketing, production and other subjects of vital interest during the remainder of the year. It would not repeal the laws requiring proper attention to diseased colonies, and our proposed bill provides that the State apiarist can be called on petition of the beekeepers in any locality to examine bees which are supposed to be diseased. If he finds disease to be present he is required to give the owner written instructions for the proper treatment or destruction, which instructions the owner is required to comply with within the time specified. However, the enforcement of this law is left in the hands of others, and he is not handicapped by being required to see that his own instructions are followed.

According to this plan it is hoped that, by paying a salary for full time, a competent man can be secured for the work. By making his work purely educational in character, it is hoped that he will be able to reach many more people, and to avoid the prejudice

AN APIARY OF MATING HIVES—B. M. Caraway

which is apparent under the present law. I realize that this plan is not perfect, and that valid objections may be raised, but in a State like Iowa, where 50,000 square miles of territory must be covered, and where there are 30,000 beekeepers, big and little, I am convinced that far more can be accomplished with the *small funds which can be secured* for this work than by the present plan.

It is hardly within the province of the State to examine every individual colony of bees in localities where disease is present any more than it is to examine every pig where there is an outbreak of cholera or other animal disease. Quarantine methods are justified and necessary in dealing with some new malady which has not yet become generally spread, but it is a hopeless task to undertake to eradicate any wide-spread contagion by these methods. I am fully convinced that this plan will shortly be abandoned and educational methods substituted very generally.

Atlantic, Iowa.

[We have hesitated to insert the above article because of the probable objections of men placed in entirely different circumstances, who find advantage in the inspection of bees and feel the need of it. But Mr. Pellett has had experience and is entirely disinterested, two valuable qualities. We want the opinions of others who differ with him. But we trust they will first carefully read the statements made in the article. In most States the appropriation is insufficient. In Illinois, our inspector, Mr. Kildow has repeatedly said that the work of inspector should be mainly a work of education.

On the other hand, it is necessary that some method should be used to compel the treatment of bees where the apiary is neglected and becomes a danger to the public. Sooner or later we should be able to secure the thorough control of diseases. There is already a great decrease in the spread of foulbrood. Whatever we do, we must secure efficient men, men of experience for both the educational work and inspection. Beekeeping is thriving, in spite of diseases, but it is imperative that we should continue our efforts. The best way to secure good results is what we want to discuss.—EDITOR.]

Moving Bees by Wagon and Automobile

BY WESLEY FOSTER.

THE writer's first experience in moving bees overland was in 1903, when 125 colonies were loaded, together with extra comb-honey supers, supplies, etc., upon two flat-bottom hay-racks and a one-horse spring wagon and hauled 35 miles. The moving was done during our often delightful winter weather, during the day, warm enough for the bees to fly and cool enough morning and evening so the bees did not care to venture forth.

As we had no screens at that time and the weather was quite warm, the covers (and inner covers where we had them) were nailed to the hive-bodies. The bottom-boards were already nailed to the hives, so all that was needed to close the hives was soft cotton to close the entrance. The bees were loaded in the evening and early in the morning, and the start was made about 9:00 o'clock in the morning. As we had nothing in the way of springs on the hay-racks, all the cushioning was of straw, and while that helps, it is not sufficient unless one drives carefully and the combs are tough.

During the day the sun shone very warm and some bees were continually coming out and flying around the loads. When we stopped for dinner and an hour's rest, it seemed as though a swarm was about each wagon—the bees, however, were gentle and did not offer to sting, and by the time we were ready to proceed, most of the bees had clustered upon the outside of the hives on the wagons.

In loading we loaded two tiers high and on top of the two tiers we piled the supers, extra hives, etc. Over the whole load we put large wagon sheets which darkened the hives considerably and helped in keeping the bees (that did get outside their hives) from flying around.

The drive of 35 miles took one and a half days, so we had the last half day for unloading and arranging the apiary.

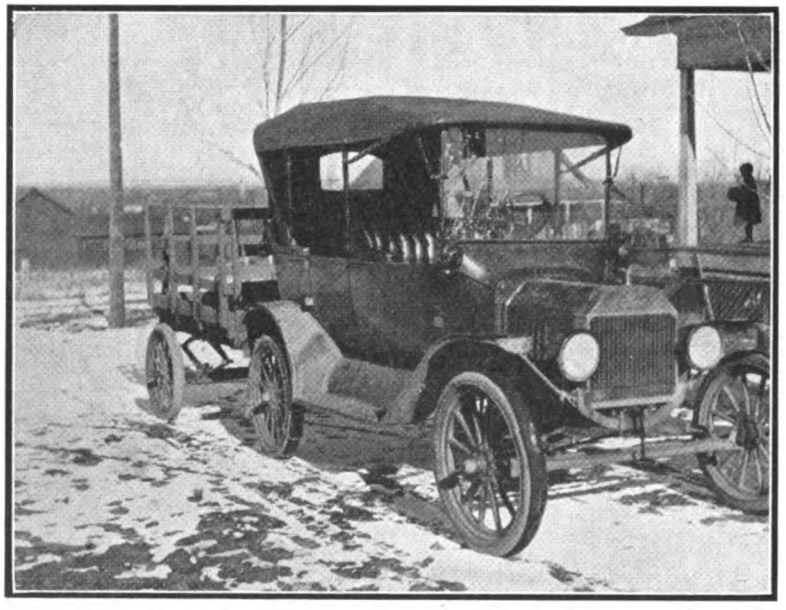
I have moved bees without a single bee getting out of the hives, but this cannot always be depended upon, so one should always be ready for any emergency.

It does little damage for some bees to get out when moving by wagon, as most of them cluster on the hives, but when moving by auto, the motion is so rapid that what bees get away from the machine, do not get back.

Often on the rear of the wagon will be clustered near a half bushel of bees riding contentedly over rough roads and smooth, firm in the faith that they will be able soon to re-enter their own hive or one just as good.

When moving by auto, if the weather is cool, it is often unnecessary to fasten either cover or bottom-board, and I have closed the entrances with snow successfully for a haul of 5 to 15 miles.

Where 25 colonies to 100 are hauled by auto, the covers and bottoms should be nailed or stapled on tight.



A FORD AUTO AND TRAILER HAVE A CAPACITY OF ABOUT ONE TON

Much of my moving has been done in spring or early summer, moving the bees in close to the foothills for the mountain bloom and out to the alfalfa fields for the July and August flow. When moving the bees in March and April, no screens are needed, unless the days are very warm, or a few colonies are extra strong.

When it comes to moving colonies to the alfalfa fields again, then is where care must be taken to give abundant ventilation and clustering space for the bees. I have never fastened the bottoms of the brood-frames and it is unnecessary when hauling by auto if the frames are self-spacing.

All colonies of full strength are provided for clustering above the brood, and the wire-screen is placed on top and nailed on with four 6-penny nails; the bottom, body, super and screen are then crated together strongly with an upright lath strip at each corner nailed on with shingle nails or cement coated nails. It is not necessary (unless the weather is extremely warm) to place strips of wood between one tier of hives and the next on top for the free circulation of air, as enough air gets through if the bees do not become overheated.

If bees become overheated and emit that tell-tale smothering smell, unload at once and release the overheated bees. If sufficient clustering space and air be given, this will be unnecessary, but often we mistake the strength of a colony.

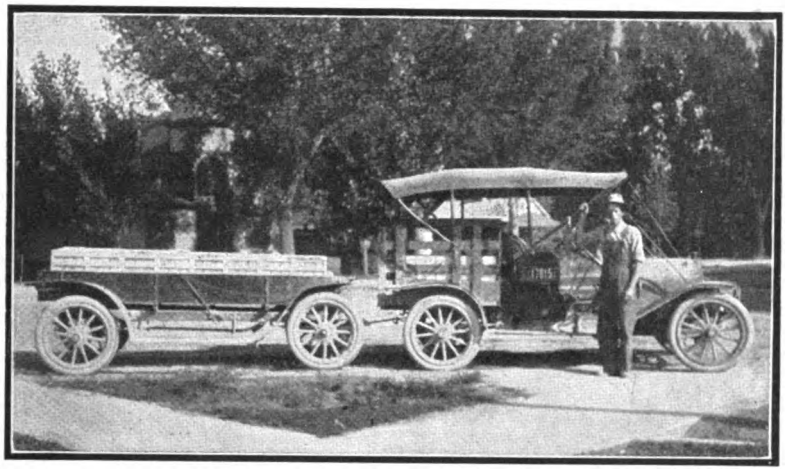
An auto is by far the most satisfactory for moving bees, as the bees ride so quietly that it seems many of the colonies do not know they are being moved.

My equipment now for moving bees,

and in fact doing all my bee work, is a Ford touring car with a two-wheeled trailer. The trailer has a capacity of about 1000 pounds, although I have had 1700 pounds in it. Twenty-five colonies may be loaded if they are not too heavy.

It is surprising what capacity the Ford has for pulling. I have had more than a ton in the trailer and in the rear of the car (to hold the wheels on the ground), and can go 20 miles an hour with it on good roads. The trailer tires are 28x3 inch pneumatic, and while the rim cut some when loaded heavily, it is cheaper to replace a few tires than make so many trips.

The trailer was built at home and in a local blacksmith shop, and cost about $40, including tires. All the wood used is oak except the floor, which is pine. The axle is a 4x6 inch oak timber, and we broke it once, too.



FOUR-WHEEL TRAILER OF T. F. EASLEY AT READ, COLO.

BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

Beeswax for the Teeth

The following item is from a monthly magazine:

"A dentist recommends chewing beeswax while dressing in the morning as a dental exercise. It resists the teeth gently and its use will aid the teeth to become white and clean and strong and the gums firm."

It would be interesting to know just how the price of beeswax would advance if this practice should come into general use. Something depends upon whether beeswax be used each morning, or the same quid be used day after day after the fashion of gum-chewers. The question might arise whether dressing would be as expeditiously accomplished with a wax-chewing accompaniment. No doubt Horace Fletcher would advise that the extra chewing be done upon the food rather than upon beeswax.

Beekeeping for the Disabled

John Clark, of North McGregor, Iowa, is a paralytic and yet earns a living for his wife, little children and himself. Until a year ago when stricken with apoplexy he was a plasterer. He was skilled at the trade, had plenty of work and made good money. Meanwhile he had a hobby. It was bees. He can't remember when he wasn't interested in bees and would rather be fussing with them than doing anything else. After marriage his wife became interested, too.

They bought a small piece of land on the outskirts of town in a little valley among the Mississippi river hills where lots of sweet clover and much basswood grow. Reserving part of the land for the bee-hives, Mr. Clark set most of the rest of it to fruit. Apple, pear, plum and cherry trees, raspberry, blackerry, currant and gooseberry bushes were planted. The fruit blossoms would provide nectar for the bees and the bees would pollenize the blossoms as he figured it.

The fruit farm was nicely started, the bees were busy as bees in half a hundred stands and the husband and wife had the plans drawn for a pretty bungalow to be built at "Sunnyside Apiary", as they had named their little farm. Before the plans could take definite form Mr. Clark was stricken with apoplexy and the hard problem of obtaining money for food, clothing, doctor's bills and fuel drove away the roseate dream of the bungalow among the apple blossoms and the honey-bees.

It was then Mr. Clark gave thanks for his hobby, and the wife said: "If you will direct me from your bed I'll do the work and we'll see if we can't make our bees earn a living for the family." That was a year ago. November 15 this year they had sold 3600 pounds of extracted honey and had 500 pounds of comb honey stored in the cellar. This was the yield of 79 stands. The last few months Mr. Clark has been able to work a little in the apiary. He gives his wife the credit for their success because she did most of the work. She gives him the credit because he directed the job, which shows that as a married couple they are no less successful than as beekeepers.

Others are keeping bees in the country near by but with nothing like as good results. Mr. Clark attributes his success to good management and to their location near an abundance of sweet clover and basswood. Everybody knows the finest honey is "basswood honey," and nobody knows it as well as the bees themselves. When the basswood blooms the first two weeks in July, if there is no wind and the weather is fair the bees in Sunnyside Apiary will store 25 pounds per colony in ten days. The honey they make is so good that the proprietor has no trouble at all in marketing it. In fact, buyers this year come to the house for most all of the crop.

"Do you like the work?" the invalid was asked, and his face lighted up as he answered, "It's the most interesting business anybody can have. You never get tired of bees. There is always something new turning up and you can work with them a lifetime and still not know all about them." The wife answered, "I just love to work with them and now that I have learned how to take care of them do you know I have about decided beekeeping is a job really better suited to women than to men, for success in it depends upon looking after the little things, and I believe women naturally can do that better than men." FLORENCE L.

From 79 colonies the yield was 3600 pounds of extracted honey and 500 pounds of comb. If we figure that 50 percent more extracted than comb can be obtained, then the 500 pounds of comb would equal 750 of extracted, which added to the 3600 would make 4350 pounds of extracted.

It would be interesting to know what price was obtained for the honey, but that is not given. Some who are especially favored get 20 or even 25 cents a pound for extracted honey of best quality. Few, however, can reach that. In this region the consumer does no grumbling at paying 70 cents for a 5-pound pail of white honey, and the price of extracted seems to be on the rise everywhere. At 70 cents a pail, after paying for the pail, 13½ cents net would be received per pound. That would make $587.25 for the crop, which will go quite a way toward keeping the wolf from the door, even in these high-cost-of-living times.

Most likely a hundred colonies can be managed just as well, which at the same rate, would yield more than $743. Indeed, it would be nothing strange if 150 colones might be supported and managed on the same ground, making the income $1115. For it would be noted that the yield is only 55 pounds per colony, and it would be nothing remarkable if further experience should materially increase the average. On the whole the outlook is quite promising for our afflicted friend and his faithful wife.

Not every one would agree that basswood honey is the best; but that may pass under the principle that no honey is so good as that made by "our bees."

Some may question whether the cellar is the best place to keep comb honey. That depends. In some places, as in Colorado, where the air is very dry, the cellar is all right. But in the

average cellar in most places honey will attract moisture from the air, and it will not be so very long before the thinned honey will ooze out and weep down over the cappings. Yet in the dampest cellar in Iowa, honey may keep well if there is a furnace in the cellar and the honey is placed beside it.

Booklet About Various Kinds of Honey

In the Ladies' Home Journal appears conspicuously the following item about honey:

"American wives would do well, experts say, to use more honey, both in cooking and in the natural state. Your government has published a booklet telling all about the various kinds of honey, their value as food, and containing more than 50 recipes for using them. Free as long as the free supply lasts—after that 5 cents."

Considering the immense circulation of that most popular magazine, that item ought to give honey quite a boost. Here's a vote of thanks to the Ladies' Home Journal for the favor it has done beekeepers and—the public.

A Beekeeper Seven Years Without Being Stung

Miss Anna Piel, of Columbus, Ind., has the unique distinction of having run a profitable bee-business in this country for more than seven years without being stung, either figuratively or literally. At the recent convention of the Indiana Beekeepers' Association, Miss Piel rounded up practically the entire vote of the convention for women suffrage by a skillful analogy of life in a bee-hive and a suffrage camp. She said that drones were always antis, and that only the workers should be entitled to "honey." Woman suffragists she added, were all "workers," and far more entitled to the vote than a number of masculine "drones" that she knew of who spent most of their time "buzzing" lazily with their neighbors while the so-called "Queen" of their establishments took in washing to make both ends meet.—*National Enquirer.*

Teach the Value of Honey

Here are some things that should be known by each housekeeper, especially each mother:

It cannot be too widely known that honey is not only a delicious condiment, but a valuable article of food. It has value because of its flavor, which increases the flow of saliva and promotes digestion.

The average consumption of sugar in this country is something more than 80 pounds for every man, woman, and child. Some have less than the average, some very much more, and in that lies danger of sickness and death. For the cane sugar we have on our tables and use in cooking must be inverted by the digestive system into grape sugar before it can be assimilated, and too much of this inversion overburdens and brings disease. The sugar in honey is always inverted, ready to be taken directly into the blood.

Honey has special value because of the minerals it contains, which are entirely lacking in sugar. One of these is iron. It is quite generally known that a very important part of the blood is the iron it contains, albeit in very small quantity. Iron and other minerals are contained in honey in the very best form of assimilation, and we would be a sturdier race if a large part of the sugar consumed were replaced by that best of all sweets produced in the laboratory of the bee.

MISCELLANEOUS NEWS ITEMS

Farmers' Week at Amherst, Mass.—The novel feature of the year is the devotion of one session, namely, Tuesday afternoon, March 27, to the discussion of the value and uses of honey in the home and in cookery. Miss E. B. Shapleigh, of Columbia University, will give the cooking demonstrations. The writer will prepare for exhibition a collection of type honeys as well as of some brands. This is presumably the first effort to introduce honey for home consumption by means of Farmers' Week or through college extension work.

The program has not as yet been prepared. The sessions will open, however, March 27, at 9:00 a.m., and continue until Thursday noon, March 29. A number of prominent speakers are being engaged. The Thursday program, beginning at 9:00 o'clock, will include a joint meeting of the Hampshire, Hampden, Franklin Beekeepers' Association, Mr. O. M. Smith, of Florence, president, under whose auspices the program will be conducted.

The beekeepers' section, Section 8, is merely one section of an elaborate program for the week, during which about a thousand visitors are anticipated. The general program will cover all phases of agriculture. Application for the beekeepers' program can be made to BURTON N. GATES.

Amherst, Mass.

Indiana Beekeepers to Meet.—Under the auspices of the Indiana State Beekeepers' Association we are going to hold a one day beekeepers' meeting on March 9, at Washington, Ind. I believe this is the first meeting of the kind ever held in this State, and if it proves successful, I hope that several will be held next year.

The program will be as follows:

9:00 A.M.—Opening Address by S. H. Burton, Washington.
9:30 A.M.—Discussion of American and European Foulbrood by D. W. Erbaugh, of Onward.
10:30 A.M.—Possibilities of Purchasing Pound Packages of Bees from the South, by S. H. Burton.
1:30 P.M.—Queen Rearing, by Jay Smith, of Vincennes.
2:00 P.M.—Beekeeping Industry Recognized by Our State, by Mason J. Niblac, of Vincennes.
2:30 P.M.—The Work of Inspectors and Their Importance to Beekeepers, by F. N. Wallace, State Entomologist, Indianapolis.
3:00 P.M.—Question Box.

Northwestern Kansas Meeting.—The Northwestern Kansas Beekeepers' Association was formed at Manhattan, Kans., on Jan. 22, with a membership of 22. A constitution was adopted and the following officers were elected:

President, D. Von Riesen, of Marysville; Vice-president, John W. Lewis, of Manhattan; Secretary and Treasurer, Harry A. Huff, of Chapman, and two directors, Samuel Winsor, of Wakefield, and C. H. Failyer, of Manhattan.

A petition was prepared and sent to the Kansas legislature, asking them to vote for an appropriation of $5000 for the next two years for fighting foulbrood in the State. After the completion of the organization the following program was given:

Equipment, by J. H. Merrill; Honey Plants, by Prof. Roberts, of the Kansas State Agricultural College; A demonstration of the treatment of bee diseases, by J. H. Merrill; Bees as cross pollinators, by Geo. O. Greene, of K. S. A. C.; Spring Management, by Chas. Mize; Relation of Kansas State Agricultural College to Apiculture, by Prof. G. A. Dean, K. S. A. C.

An invitation was extended to the association to hold a field meet at Chapman some time in May, and was accepted. This makes the third auxiliary association in the State, and it is expected that there will be a fourth formed in a short time.

The Quebec Beekeepers.—The meeting of the Quebec Province Beekeepers' Association was held at Montreal Nov. 15 and 16, with a very full attendance.

The president, Dr. Lalonde, announced the successful passage of a law against adulteration of honey and beeswax. This was entered in the record.

Addresses were heard from the following: Beekeeping in School Gardens, by Charles Magnan; A Year with the Bees, by J. F. Prudhomme; Classifying, Packing and Shipping Honey, by Art Vaillancourt; Statistics on Bees, by F. N. Savoie, representing the Minister of Agriculture; Beekeeping in the District of Quebec, by J. Verret; Epilobium as a Honey Producer, by the president, Mr. Lalonde; Report on the Crops of Maniwaki and Mont Laurier, by Dr. A. O. Comiré, showing that large crops are harvested in that section; Cooperation in Beekeeping, by Aug. Trudel; Successful Beekeeping, by A. L. Beaudin; Honey as Food, by E. A. Fortin; Queen Rearing, by E. Barbeau; Sugar Feeding of Bees, by Mr. Péloquin, etc.

Lectures with lantern slides were given by Messrs. J. I. Beaulne, of the Ottawa Department of Agriculture, and Morley Pettit, of Guelph. Mr. Sladen, Dominion Apiarist, also lectured on the wintering of bees.

Some 35 prizes were given to exhibitors of honey, beeswax and implements.

After numerous discussions of interesting bee subjects, inspection, honey

sales, etc., the meeting adjourned. The members declare themselves well pleased with the prospects and promise to return next season, in greatly increased numbers.

OSCAR COMIRE, *Sec.*
Abenakis Springs, Quebec.

Death of a Washington Beekeeper.—Through our correspondent Mr. A. E. Burdick, we are informed of the death of Mr. W. M. Williams, of White Swan. Mr. Williams, though not a very extensive beekeeper, was one of the "old ranks" in the West.

The family is unable to care for the bees and want to dispose of them. Parties interested should write to Mrs. J. H. Waters, White Swan, Wash.

The New Jersey State Beekeepers' Meeting.—The annual meeting of the New Jersey State Beekeepers' Association was held in the Entomology Building of the Agricultural Experiment Station at New Brunswick on Jan. 9–10, according to previous announcements. Several notable speakers were on the program, and several others appeared and added interest to the occasion. About 40 beekeepers from all parts were present, besides several ladies, though fewer than usual.

Heads of the departments of the Experiment Station addressed the meeting. Dr. Lippman, the director, emphasized the benefits of increased acreage, especially of alsike clover, being promoted by the department. Also the great value of lime in connection. Dr. Headlee, State Entomologist in charge of bee inspection, discussed the necessity of more extensive and thorough inspection if any results are to be attained. Inspector Carr gave a report of results in three counties which were very thoroughly combed during 1915–1916, showing the possibility of eradicating American foulbrood and greatly reducing European by extended painstaking work.

Mr. Frank C. Pellett, of Iowa, gave two very interesting talks; that upon beekeeping in the Mississippi Valley was treated under three heads, viz.: localities, systems, and markets. Mr. Pellett showed thorough familiarity with the details of each, and valuable conclusions were drawn applicable to other areas occupied by beekeepers. His illustrated talk about beekeepers he had met was most interesting.

Harold Hornor gave his method for securing a minimum crop, annual requeening after the honey flow, wintering on the summer stands in 2-story 8-frame hives, and some minor details. A lively discussion followed in which C. H. Root, E. R. Root, Frank C. Pellett and others participated.

E. G. Carr discussed the cause of failure in foulbrood treatment by the Alexander method, giving three conditions as indispensable to success. First, a strong colony, specifying six frames of brood and bees. Second, a period of positively no brood-rearing, and third, *good* Italian queens.

President Barclay's address on securing fancy prices was in an ironclad vein, and caused some merriment.

J. H. M. Cook gave personal recollections of early bee meetings, which showed the small beginnings of these occasions, now so valued. Mr. Cook is probably one of the best informed along these lines, having kept pace with the times.

Due mention must be made of the large share of interest contributed by E. R. Root, who "just dropped in." His talk on the value of a trade name was certainly an eye opener which might well be taken to heart by every commercial honey producer. Mr. Root in a talk subsequently urged the importance of a broad study of general market conditions by the commercial beekeepers. As a comprehensive statement, he advised extracted honey for the western man, and comb for the eastern, on account of the climatic conditions. This program would tend to adjust the production to the demands of the general market; neither too much fat nor too much lean.

At 7:30 in the morning of the second day a dozen of the more enthusiastic, under the guidance of Mr. Carr, took a trolley to visit the apiary of Dr. Headlee, at Highland Park, which is being used for experimental purposes in connection with the Agricultural Station. Various methods of outdoor winter protection are being tried, including the famous winter case of C. H. Root.

President Barclay having demonstrated his ability and fitness, and Secretary-treasurer E. G. Carr, the indispensable, were re-elected unanimously. 1st Vice-president Root and 2d Vice-president Cheney were also re-elected. F. C. Diener was chosen as 3d Vice-president to succeed Walter Garrabrant, who is too busy to attend.

While the attendance was less than usual, the meeting was far from being dull, being likened to a post graduate course. This suggested the idea of making the summer meetings more of a primary character, with talks and demonstrations for freshmen and undergraduates who can more conveniently attend those meetings. This plan may be further considered. C. D. C.

The New York Meeting.—During the holiday week a meeting of inspectors and instructors in apiculture was held in New York in connection with the meeting of the American Association of Economic Entomologists. Representatives of several State universities were present, and a most interesting session was held. Doctor E. F. Phillips' paper on "The Results of Apiary Inspection," was one of the most important of the entire program. It was based on the work of several States where inspection has been carried on for several years. He showed a marked decrease in bee-diseases where there is efficient inspection. Frank C. Pellett had a paper on the "Problems of Bee Inspection," in which he outlined the difficulties which the inspector must meet, and suggested some changes in policy whereby a less number of colonies will be examined and more demonstration work similar to the work of Prof. Pettit in Ontario be substituted. One of the principal difficulties of the present system lies in the limited funds which are seldom sufficient to do the work outlined. The demonstration plan will reach more people with the small funds available.

E. G. Carr, of New Jersey, talked on the requeening method for the treatment of European foulbrood as first advocated by Alexander, and by means of charts gave some interesting details of his experience with this disease.

Doctor Gates, of Massachusetts, outlined the essentials of a course in beekeeping as taught in his institution. The fact that a special session is given over to the consideration of the problems of the beekeeper at one of the most important scientific meetings of the year speaks well for the future of the industry.

An effort was made to secure uniform reports of the inspection work in all States where inspection is provided for. Since so many different methods of making reports are used there is little chance for comparison, which will enable one to tell whether the results in any particular State are up to the average. With uniform reports poor work will be apparent much sooner than under the present hit and miss system.

Doctor Burton N. Gates was elected President, and N. E. Shaw, of Ohio, Secretary of the section for the ensuing year. Since the tendency is to modify the plan of inspection in the future, we hope later to reproduce some of these papers.

Beekeepers' Convention in Massachusetts.—In connection with Farmers' Week at the Massachusetts Agricultural College, there will be a beekeepers' convention and short course in beekeeping March 27 to 29, inclusive.

Among other addresses and discussions will be those upon the following subjects: Care and manipulation of bees, Wintering bees, Removing from cellar, Swarming problems, Honey handling and keeping, Cooking with honey, Comb and extracted honey, Marketing, Queen-rearing, etc.

The Hampshire, Hampden and Franklin associations will meet on March 29. There will also be some exhibits of special interest to beekeepers.

PALATABILITY OF SWEET CLOVER.

Some years back there was no little objection to sweet clover on account of the difficulty of getting cattle to eat it. The following is copied from the Breeders' Gazette, and shows that the preference if any was for sweet clover over alfalfa:

Many farmers say that cattle will not eat sweet clover. At the same time there are others whose animals relish it with a keen appetite. So much had

been said pro and con with reference to the palatability of sweet clover that it led to an experiment by the Iowa station. This experiment was conducted last summer to determine whether cattle used to feeding on sweet clover and alfalfa would show any preference for one forage over the other.

Six yearling heifers, all about the same size, were fed 80 pounds of sweet clover hay and 80 pounds of alfalfa hay in the same rack at the same time. Forty pounds of each hay were placed alternately in the rack so that the animals would have equal access to both. After the heifers had eaten until they would eat no more, the hays were taken out and reweighed. There were 34 pounds of sweet clover left and 48 pounds of alfalfa, thus showing that the animals had eaten 14 pounds more of the sweet clover than alfalfa, or 2.3 more pounds per head.

In grazing these same animals on alfalfa and sweet clover pasture, side by side, no preference was shown for alfalfa. The sweet clover was eaten as readily, although it was five or six feet tall and therefore very coarse. Yet some people insist that cattle will not eat sweet clover at all. Give them a chance. Sheep will even show a greater preference than cattle for sweet clover. Horses thrive well on it, even eating the forage when it is very coarse and woody. W. E. BOWERS.

Virginia Polytechnic Institute.

Wabash Valley Meeting.—The Wabash Valley beekeepers are going to hold a meeting at Mt. Carmel, Ill., March 10, to organize a beekeepers' association. Headquarters to be at the Merchants Hotel. All beekeepers are invited to attend.

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to DR. C. C. MILLER, MARENGO, ILL.. He does NOT answer bee-keeping questions by mail.

To Those Who Send Questions to Dr. Miller:

It seems necessary every now and then to mention some points to be kept in view by those who send questions to be answered. First, as to the time of, sending. It occurs sometimes that a subscriber sends a question and asks that it be answered, say in the April number, when the April number is in print. A subscriber should understand that it takes a number of days from the time a question is mailed before it can appear in print. There's the time of your letter going through the mail. Then, if a number of questions come in the same mail, as often happens, it may be more than a day before I can mail the answers, and some exigency may arise which will occupy several days. Then there's the time of the journey from Marengo to Hamilton, after which the nimble fingers of the printer must put the answers in type, letter by letter, then the different forms must go through the press, one side being printed at a time, and then it's a big job to get all the journals dressed in their wrappers and addressed before Uncle Sam can be ready to carry them to you. The outcome of all this is that if you want an answer in the April number, your letter must get to me in time so I can mail the answer from Marengo not later than March 10. That makes it that you must mail your letter perhaps three days before that date, if you are not far from Marengo, and several days sooner if you are very far away. If you mail your letter to Hamilton, so it must be forwarded to me, then it must be sent still earlier. It is a little better, always, if you send your letter direct to me.

At the head of this department appears each month the statement: "He does NOT answer beekeeping questions by mail." Yet in spite of that I get letters saying something like this: "I know it is your rule to answer no questions by mail, but it will be too late to be of any use to me if the answer comes in print, so please answer by return mail." Looks like I might accommodate in such a case, doesn't it? But the trouble is that nearly every one would prefer an earlier answer by mail, so if I should answer all by mail then you would get no good of the answers I make to others, and I should give up answering altogether.

So don't think of asking answers by mail, and better send questions to Marengo rather than to Hamilton, and send them in good time, and I'll be not only willing but glad to answer all your questions in the Bee Journal to the best of my ability.

Bees Dying

What is the trouble with my bees? During the cold spells so many have died. Is it due to old bees or is it due to something else?

ALABAMA.

ANSWER.—Without any particulars I can only guess. It may be because an unusual number of bees are old, as you suggest, brood-rearing having ceased earlier than usual. It may be on account of unwholesome stores—possibly honeydew—and it is possible there may be some other trouble that I know nothing about.

Eight-Frame vs. Ten-Frame Hives

1. Will bees winter better outdoors in 8-frame hives than in 10-frame hives, provided they have plenty of stores and same amount of bees?

2. Will there be as much brood in a 2-story 8-frame hive as in a 2-story 10-frame; that is will the queen lay as much in the 2 stories as when she could stay in the lower story?

3. Will the bees swarm more in an 8-frame hive of two or more stories than in a 10-frame hive of two more stories, letting the queen go in the second story?

4. I expect to run for comb and extracted honey. Can I get as much extracted from 8-frame hives as from 10-frame hives, if I pile up the stories and let the queen go in the second story? ILLINOIS.

ANSWERS.—1. I should say they would. At the same time it is only fair to say that in general a colony in an 8-frame hive would not have the same amount of bees and stores as one in a 10-frame hive.

2 Naturally one would think it a hindrance to a queen to go up and down from one story to another, but when I have tried it I could not see that it made any difference.

3. I don't know; but I think it will make no difference unless you have a queen so prolific that she needs more than 16 frames.

4. Yes, provided you have as many bees in one case as the other. But would you?

Colonies Dying—Distance of Hives

1. Early in the fall I had 12 colonies, but before I was aware of it I think three of them were robbed. I examined them and found there were no bees. A few days ago I went out to see how they were getting along and found two more hives with bees all dead sticking in the combs (or cells) in the lower part of the brood-frames and to the front end of the hives, and every frame was full of honey and brood and sealed very nicely.

They were in good patent hives and were protected by a pad of leaves on top of the hive and a pasteboard box a trifle larger than the hive and turned down over; also a good wind break of boards on the west. I took out the frames and examined them, and found they contained brood and what I took to be queen-cells; they projected considerably from the level of the surface like little mounds. Do you suppose they froze to death?

2. What can I do with those hives that have the dead bees and brood in them? If I clean out the dead bees and put another swarm in the same hive in the spring, will they clean it out and go right to work? If I undertake to cut out portions of it that will cause the honey to leak and will make a bad mess. I would like to save the brood-frames if possible and the time of refilling?

3. How close to each other would you suggest placing hives?

4. What can I do to prevent robbing?

5. I find some dead bees in front of each hive. Are they drones that have been killed off? NEBRASKA.

ANSWERS.—1. I suspect those bees starved. Like enough the colony was weak, the cold was very severe, and the bees were gathered in a small cluster with no honey in immediate contact with them, and unable to reach the honey which was in abundance in the hive. Then they starved or froze, whichever you please to call it. They were likely queenless, and the "little mounds" drone-cells.

2. Brush off the dead bees, and when the weather gets warm and bees are flying daily, set a hiveful of the combs under a strong colony, forcing the bees to go down through these combs to get outdoors. They will be cleaned up ready for the first swarm that comes.

3. Set your hives in pairs, the two hives of each pair as close together as you can without having them touch each other. Between each pair allow a space of three feet, a little more if you have plenty of room, and a little less if you are crowded for room. If you have more bees than you want to put in one row, you can set another row back to back with the first row. If you have still more bees, you can set another row facing one of those rows with ten feet between the rows, more or less according as you have room.

4. The thing to prevent robbing is to keep colonies strong, and if you have a colony that is not yet strong let its entrance be small, and see that there are no cracks through which robbers can enter. Be careful not to have any pieces of comb with honey or dripping honey lying around. Don't allow queenless colonies.

5. They may be drones, but more likely workers, for workers are always dying in winter.

Buy Full Colonies or Pound Packages

1. What is the best way of uniting pound packages of bees without queens to weak colonies in the spring?

2. Which would you consider the better way for increase, full colonies at $7.00 or pound packages with queens at $3.25?

3. I had a colony of bees with an old queen that was clipped. About August they tried to supersede her. They built three or four cells, and after they were hatched the hive

was opened and the old queen was still in the hive. During the fall they tried to supersede her again, but with the same result. What was the cause of this?
NOVA SCOTIA.

ANSWERS.—1. The bees being hopelessly queenless, and further disheartened by their journey, they should not offer any antagonism to the queen or workers of the little colony to which they are given, and as they will be well gorged they should be kindly received. However, if you want to take extra precaution, you can unite by the newspaper plan of uniting colonies. Put a single sheet of newspaper over the top-bars of the weak colony, set over this a hive-body containing a few combs with some honey, dump in the new bees and cover up beetight. The bees will gnaw a hole in the paper, and gradually unite peaceably.

2. I think I would take the full colonies.

3. Are you sure they were trying to supersede her or trying to swarm? Anyway, was there anything unusual about it if they were trying to supersede her? Don't you know that in the natural course of events every laying queen is superseded by the bees? Always, always. As to the cause of the superseding, I suppose the bees think the queen is not as good as she ought to be, generally on account of her age, although I have known a poor queen to be superseded when less than a month old.

Wire Imbedder—Clover

1. Could you give me instructions for making the electric wire imbedder shown on page 342 of the American Bee Journal for October, 1916, Fig. 4?
2. I have a hive of bees whose honey drips on the bottom of the hive. I examined them but could not find the comb molested. It puzzles me. Here in January mice could not get in the hive.
3. Would alsike clover make good bee pasture if sown in a shaded orchard, and would it grow?
4. Would you advise planting sunflowers in convenient places for the bees or would it make honey dark?
5. What is the best time of the year for sowing sweet clover, and how long after sowing until it should bloom? IOWA.

ANSWERS.—1. This appliance has since been patented. It sells for $1.00 without batteries. Any supply house should be able to supply you.

2. I wonder if it wasn't water instead of honey. It is not an uncommon thing for the moisture from the bees to condense on the walls of the hive and run out at the entrance. (If much of their honey is unsealed, it may have gathered humidity enough to more than fill the cells.—EDITOR.)

3. Yes, it would grow and yield, but the less shade the better.

4. From my experience in trying it on a small scale, I don't believe you would find it would amount to much unless you should plant several acres.

5. You can sow it as soon as the seed is ripe in the fall, or you can sow it in spring at the usual time of sowing other clovers in your locality. Seed sown in the fall of 1916 or the spring of 1917 will bring bloom in the summer of 1918.

Artificial Swarming—Getting a Good Start—Queen-Rearing

1. What is meant by artificial swarming?
2. What is meant by divided brood-chamber?
3. What is the best way to get a good start in the bee business?
4. Will you kindly tell me about rearing queens from a selected colony?
5. What is the season for swarming here in Minnesota?
6. What is the yield and profit from one good colony in one month? MINNESOTA.

ANSWERS.—1. The term "artificial swarming" is loosely used for "artificial increase," and refers to any manner of increas oother than by natural swarming.

3. A divided brood-chamber is one in which the brood is contained in more than one story, usually in only two. Generally each story is shallower than the depth of a Langstroth hive, although it is not impossible to have a divided brood-chamber with deeper hive-bodies.

3. The best way to make the right start is to get a good book on beekeeping, such as Dadant's-Langstroth. The book will suggest further steps.

4. A whole book might be written in reply to that question. In fact, an excellent book on queen-rearing has been written by that eminent authority, G. M. Doolittle. So you will see that the answer hardly belongs in this department. I may say briefly, however, that I rear queens from my best queen by allowing the colony to be rather weak, giving it an empty frame in which to build new comb, then when the frame is partly filled with comb I give it to a strong colony made queenless, and get fine cells. You will find full particulars of the plan in the book, "Fifty Years Among the Bees."

5. I think it usually begins somewhere about the first of June, with little swarming after the middle of July.

6. That varies greatly, for the best month in the year ranging from less than nothing up to $25 or more, according to pasturage or locality, kind of bees, season, or management.

Granulated Honey for Feed

I have several frames of granulated honey taken from a hive. I would like to know if it could be fed to bees without causing them any harm? WASHINGTON.

ANSWER.—It will do the bees no harm, but they are likely to waste the granules. Uncap any that is sealed, spray the combs with water, preferably warm, and give to the bees. It may be well to repeat the spraying every two or three days until the combs are emptied.

Is Maple-Tree Juice Harmful?

In my locality, even in mid-winter, I frequently notice my bees busily engaged in gathering, on warm days, the juice of the maples which have been tapped by the woodpeckers. The next two or three days will probably be too cold for the trees to run or the bees to fly. Do you think under such conditions the juice will have any harmful effect upon them? KENTUCKY.

ANSWER.—I don't believe it will do harm to amount to anything. All the less danger because as far south as you are the bees are never confined very long without a flight.

Caucasian vs. Carniolan—Bee-Tree Taken in Winter

1. Is a Caucasian or Carniolan queen just as good as the Italian in every respect, wintering good, honey gatherers, immune to bee-diseases and gentle? Would you recommend them just as good or better? What are their bad points?
2. I cut a bee-tree for logs Jan. 1, and in the top of it was a large swarm of Italian bees. I took them out, brought them home and put them in the cellar with my other bees. I gave them about eight pounds of honey and wired it in empty frames so I could hang it in the hive. My cellar runs about 35 to 50 degrees. I will have to open the hive to feed the bees this winter. Do you think I can get them through until spring, or will they die or have diarrhea in the spring or spring dwindling? MICHIGAN.

ANSWERS.—1. Caucasians have been claimed as the best-natured bees in existence, but some have been reported quite vicious. Carniolans are so much like the blacks in appearance that it is hard to distinguish them. They have the reputation of being excessive swarmers. I don't know as to their powers in resisting disease, bu have never heard either of the two kinds recommended as being better than Italians, if as good. Some prefer Caucasians to all others, and the same may be said of Carniolans, but in general Italians are preferred to either.

2. If they are disturbed no more than is necessary to furnish them sufficient food, they may pull through all right; but no one can be sure of the right answer before spring.

Bees Dying—When to Remove Packing?—Hives are Damp

1. I have three colonies in Massie hives, which I got last July and August. I fed them some in the fall and protected the top and sides with 6 inches of dry leaves. On examining them last week I found a great many dead bees on the floor of the hives, and using a wire raked out over a pint from one hive. Is this natural?
2. Bees were flying yesterday (Jan. 2); temperature only 50 degrees. How early in the spring should packing be removed?
3. The hives seem very damp inside. What is the remedy for this? KANSAS.

ANSWERS.—1. There may be nothing wrong. In a strong colony it might be that by the end of December as many as a pint of bees had become old enough to die, and that the weather was such that they could not leave the hive to die.

2. They will be the better for the packing until it becomes warm enough so that they fly about every day.

3. Possibly the entrance is too small; possibly the colony is too weak.

Alfalfa Honey—Queenless Colony

1. What effect does alfalfa have on the honey? Is there a tobacco flavor to it?
On Dec. 6 I saw numerous drones going out and in a hive. What is the cause so late in the fall? A READER.

ANSWERS. — 1. Alfalfa gives to honey its own peculiar flavor, just as each honey-plant does. I never detected any tobacco flavor in alfalfa honey.

2. There may be nothing wrong possibly, but it is much to be feared that the colony is queenless.

A Beginner

1. How long does a queen live?
2. How long does a worker-bee live?
3. How long does a drone live?
4. How long does it take a queen to hatch?
5. A worker to hatch?
6. A drone to hatch?
7. How do the queens mate with drones?
8. Do workers lay eggs?
9. Do drones lay eggs?
10. How many times does the queen mate with the drone?
11. Please send me about 150 questions already answered. ARKANSAS.

ANSWERS.—1. Occasionally less than a month, occasionally more than five years; generally two or three years.

2. A worker born just before the busy season may live about six weeks. Born in the fall, she may live six months.

3. A drone generally lives until the workers decide they can't afford to board him any longer. In a queenless colony he may live six months.

4. A queen emerges from her cell in 15 days or a little more from the time the egg was laid.

5. Twenty-one days.

6. Twenty-four days.

7. The queen meets the drone outside the hive, high up in the air.

8. Workers do not lay eggs except in a few cases when a colony becomes hopelessly queenless, and then laying workers appear, but their eggs produce only drones.

9. Drones, like roosters, lay no eggs.

10. As a rule the queen mates once for life.

11. I have been asked a good many different questions, and once a man accused me of manufacturing questions (he died), but you are the first man that ever asked me to furnish both questions and answers. I'd hardly like to undertake to make 150 questions that would just fit your case; but fortunately it happens that there is a possibility your desires may be met, since Editor Dadant or one of his sons expects soon after the time when this gets into print to have a book made containing 1000 questions with an answer to fit each question. Don't count too surely on it, however; he may go crazy before he gets through with it. Sometimes it's made me nearly crazy answering one at a time; I don't know how it would be to tackle a thousand at once.

Putting Up Hives—Maple Syrup as Food

1. When setting up the dovetailed hives, do you nail the corners? If so, how far apart do you put the nails?
2. Will maple syrup kill bees if it is fed to them in the spring?
3. Is it necessary to paint hives different colors so that the bees will go back into the right one?
4. Does it do any harm to disturb bees in the spring? VERMONT.

ANSWERS.—1. It is well to put a nail in each finger of the corners.

2. No.

3. No.

4. Up to the time bees can fly daily, it is bad to disturb bees unless there be some strong reason for it, such as feeding to keep them from starving After they fly daily a little disturbance does no harm, although it is better in general not to disturb them unnecessarily.

Increase—Dividing

1. What is the best method of hiving and caring for bees where only a small amount of honey or surplus is wanted and increase of swarms?
2. Do bees swarm the first year after hiving?
3. Can dividing be safely done; if so, how? ILLINOIS.

ANSWERS.—1. Perhaps as good a way as any, for one without much experience, is to allow the bees to swarm naturally, leaving the old hive always on the old stand and putting the swarms on new stands. In that way you may get several swarms from each old one, much depending on the season.

2. If you hive a swarm this year you are quite safe in counting that it will not swarm until next year. In rare cases, however, it does happen, and then the new swarm is called a virgin swarm.

3. Yes, dividing can be safely done by one with sufficient knowledge, but to do it successfully, without making some bad blunder, you should be familiar with the general principles of beekeeping, such as you will find in a good bee-book like Dadant-Langstroth. For a beekeeper to try to get along without a good bee-book is penny-wise and pound-foolish. To tell how to divide a colony hardly belongs in this department; but I may say that one way is to take from a colony all but one of its frames of brood with adhering bees, put them in a new hive on a new stand, leaving the queen on the old stand with the one frame of brood, and fill up each hive with frames filled with foundation.

Transferring—Swarm Prevention

1. I want to transfer my bees on metal-spaced Hoffman frames, Langstroth size. I do not want to use the combs of the old hive as they are too old and black. Would you advise me to use full sheets of foundation or not?
2. About what time of the year would you advise me to transfer my bees?
3. Would I need a queen or drone trap, and what other tools would I need?
4. Would those bees swarm in the spring after they are transferred, or would you advise me to let them swarm before I transfer them? They swarmed four times last spring, but seem to be pretty strong yet.
5. They claim that by cutting the queen-cells you can prevent swarming. But what if your queen should get killed or would die from old age, how could they get a queen?
6. What is the color of the larva of the bee-moth? Does it look like the larva of the honey-bee? ILLINOIS.

ANSWERS.—1. It is very much better to use full sheets of foundation. You can save three-fourths or more of the cost of the foundation by using narrow strips, but the bees will build too much drone comb, and in the end you will lose a good deal more than you gain. Are you sure you are right about the combs being "too old and black?" If you leave it to the bees to decide, they will choose old, black comb in preference to new. It is hard to find comb too old and black so long as it is straight worker-comb

2. During fruit-bloom is a good time, unless you let the bees swarm first.

3. No queen or drone trap is needed in transferring. Beside your smoker and hive-tool you need only a brush to brush the bees off the comb.

4. They will be likely to swarm at the usual swarming time, just as if you had not transferred them.

Yes, it may be full better to let them swarm first. Then you can hive the swarm in the new hive on the old stand, set the old hive beside it, and three weeks later brush the bees off the old combs into the new hive.

5. Destroying queen-cells may delay swarming, and in some cases prevent it, but generally the bees swarm sooner or later in spite of your killing cells. But if your queen should be killed, or die of old age, and you should persistently kill all queen-cells, then your colony would go up the spout.

6. The larva of the beemoth is white, or grayish white. No danger of your mistaking it for a bee-larva. The latter is found in the bottom of a cell, while the larva of the beemoth is in a silken gallery that runs along the surface of the comb through many cells.

Space Between Hives—Shade—Entrance

1. Last fall I bought six colonies of bees, placed them on the south slope of a hill, on the east side of a strip of timber, where they get the shade about 2 p.m. Do they get shade enough?
2. I placed my hives in a row, leaving 6-inch spaces for packing. Will it be all right to leave them that way for summer?
3. Should the hives be perfectly level?
4. If painted, what color is best?
5. In using boughten hives, should the size of the bee-entrance be changed for summer and winter? SUBSCRIBER.

ANSWERS.—1. It isn't a matter of prime importance. Your bees will probably do well if in the shade all day long, and also if in the sun all day. I care for shade more for my own comfort when working at the hives than I do for the comfort of the bees,

2. So close together in a straight row, there is danger that bees, and especially young queens, will get into the wrong hives If you don't want to make any greater change, you can improve matters much by moving every other hive. Move No. 2 close to No. 1—no harm if the hives touch—move No. 4 next to No. 3, and No. 6 next to No 5. In actual practice this will be as good as making the hives three times as far apart standing singly.

3. Let them slant a little forward, but level from side to side.

4. White is as good as any other,

5. In summer it is better to have the entrance very much larger than is advisable for outdoor wintering.

FILMS DEVELOPED

All roll films developed for 10 cents. We return them the same day. Everything in the KODAK Line. Send for catalog.

F. M. ALEXANDER
Atlantic, Iowa

MURRY—HE PAYS THE EXPRESS

If you live within the outer limits of the 6th postal zone (your postmaster will tell you about that), order your pound packages of me. If you return the cages in one parcel and in good condition I will refund the express charges you have paid. This applies only to 12 or more packages to points in the U. S Special rates to points in Canada. Make your arrangements 30 days in advance to insure prompt shipments.

Pound packages of bees	12	25	50	100
1-lb pkg.....	$16.00	$33.00	$ 65.00	$127.00
2-lb. pkg.....	29.50	58.50	116.00	230.00

Safe arrival guaranteed within five days of Mathis, Tex.
If queens are wanted add price of queens wanted to above prices.

I have yet failed to find anything better than the strain of Three-banded Italians I have been breeding. They have made good in all parts of America and many foreign countries. Resistant to Isle of Wight disease in England, and European foulbrood and paralysis in America. The best honey gatherers I can find; gentle to handle, requiring but little smoke to control, and cap their honey white.

There are Goldens and Goldens, but I have at last secured the real **Golden Italians.** Prettiest bees I ever saw, and good honey-gatherers. Some colonies of my present strain stored as much as 250 pounds of surplus honey the past season. Gentle to handle.

Three-banded Italians and Goldens are bred in separate yards, so far distant as to make cross mating improbable. Every queen guaranteed. I will cheerfully replace any of my queens that prove to be mismated if returned to me.

Queens	1	6	12	1	6	12	100
Prices	March 15th to May 1st			May 1st to Nov. 15th			
Untested.....	$1.00	$ 5.50	$10.00	$ .75	$4.00	$ 7.50	$60.00
Tested	1.25	6.50	12.00	1.00	5.50	10.00	
Select tested.....	2.00	10.00	18.00	1.50	8.00	15.00	
Breeders.....	5.00 to 10.00 each, any time.						

Orders filled by return mail is the rule at this shop.

Decidedly the best way for the beginner to start with bees is with nuclei, consisting of 1, 2 or 3 combs of bees, brood and honey. With ordinary care they build up and store a crop of honey the same year, if secured in the spring. Ship anywhere. Never lost one in transit in my life.

1-frame nucleus without queen, $1.50; 2-frame nucleus without queen, $2.50
3-frame nucleus without queen, $3.50 f. o. b. Mathis, Tex

Add price of queen wanted to above prices. Any number wanted at these prices. No disease. Health certificate with every shipment of bees or queens. Satisfaction guaranteed.

H. D. MURRY, MATHIS, TEXAS

Classified Department

[Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS.

PHELPS' Golden Italian Queens will please you.

FULMER'S Gray Caucasian queens are winners; also by frame and pound.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

TRY ALEXANDER'S Italian queens for results. Untested, each, 75c; 6 for $4.25; $8.00 per dozen. C. F. Alexander, Campbell, Cal.

LEFFINGWELL'S three-banded Italian bees and queens. Send for circular and prices.
E. A. Leffingwell, Allen, Mich.

PLACE your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens. John W. Pharr,
Berclair, Tex.

PHELPS' Golden Italian Bees are hustlers

VIGOROUS prolific Italian queens $1.00; 6, $5.00, June 1st. My circular gives best methods of introduction. A. V. Small,
2303 Agency Road, St. Joseph, Mo.

FOR SALE—7500 pounds of bees in combless packages, starting April 1, 1917. Better write us before it is too late to have your order booked. Marchant Bros.
Union Springs, Ala.

MY BRIGHT Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

FOR SALE—Bright Italian queens at 75c each; $7.50 per doz. Ready April 15. Safe arrival and satisfaction guaranteed.
T. J. Talley, Rt. 3, Greenville, Ala.

FOR SALE—1000 lb. bees; 1-lb. bees with queen, $2 00; without queen, $1 25. Safe arrival and satisfaction quaranteed.
J. F. Archdekin, Bordelonville, La.

FOR SALE—Forty colonies of Italian and hybrid bees; all in 10-frame hives with good worker combs. B. A. Manley, Milo, Iowa.

GRAY CAUCASIANS, exceptionally vigorous and a long lived race of bees; are known as the most gentle of all bees. Free circular and price list. Orders booked now for spring delivery. F. L. Barber, Lowville, N. Y.

HEAD your colonies with some of our vigorous young three banded Italian queens. Untested, June 1, $1.00; per doz., $9 00; nuclei and full colonies. Satisfaction guaranteed.
A. E. Crandall & Son, Berlin, Conn.

GOLDENS that are true to name. Write for testimonials; one race only. Unt., each, 75c; 6, $4.25; 12, $8.25; 50, $32.50; 100, $60. Tested, $1.50 Sel. test., $2 00. Breeders, $5 00 and $10.
Garden City Apiaries, San Jose, Calif.

GOLDEN Italian queens; northern breed; new methods. Our standard, size and honey producing qualities. Write for circular and price list.
H. M. Leach & Sons, Hiram, Ohio.

FOR SALE—2-fr. nuclei 3-band Italians with queen, $2 25; 1-lb. bees with queen, $1.65. Hoffman frames wire and foundation at catalog prices. J. B. Marshall & Son,
Rosedale Apiaries, Big Bend, La.

GOLDEN ITALINAN QUEENS bred strictly for business, that produce a strong race of bees as honey gatherers By April 1, untested, 75c each; 6 for $4.25; 12, $8.00; 100, $60. Tested, $1.50. Safe arrival, prompt delivery and satisfaction guaranteed.
L. J. Dunn, 50 Broadway Ave., San Jose, Cal.

LEATHER colored 3-band Italian bees, $1.25 per pound. Tested queens, $1.00; untested, 75c each; 2-fr. nuclei, $2.00; extra combs, 15c each. Delivery after April 15.
C. H. Cobb, Belleville, Ark.

BUSINESS FIRST — Queens, three-banded Italians. Untested, $1.00 each; 6 for $5.00. Send for descriptive price list and $10 free offer; no disease. M. F. Perry,
Bradentown, Fla.

GOLDEN Italian Queens by June 1st. Untested, 75c, or six for $4.25; doz., $8.00. Select untested, $1.00. Tested, $1.25; six for $7.00. Breeders, $5.00. Pure mating guaranteed. Send for circular. J. I. Danielson,
Fairfield, Iowa.

FOR SALE—Bees and queens of Quirins' famous northern bred Italians, nuclei colonies or bees by pound; have been a commercial queen-breeder 25 years. Free circular and testimonials.
H. G. Quirin, Bellevue, Ohio.

GOLDEN and 3-banded Italians; also Carniolan queens. Tested, $1.00; untested, 75c each. For bees and nuclei write for prices. Discount on large orders. C. B. Bankston,
Buffalo, Leon Co., Tex.

BEES FOR SALE—A number of well established apiaries in Frio, Bexar and Atascosa, Texas, in the mesquite and guajillo belt have been listed with us for sale on their present sites. Can also furnish bees in car lots.
Southwestern Bee Co., San Antonio, Tex.

FOR SALE—Apiary of bees at Tularosa, N. Mex.; up-to-date appliances, good bees, good bee location, and fine climate to live in. Selling because of death of late owner, J. A DeWitt. N. B. DeWitt,
Care El Paso & S. W. Ry., Douglas, Ariz.

MY BRIGHT Italian queens will be ready to ship April 1 at 75c each; virgin queens, 30c each. Send for price list of queens. Bees by the pound. Safe arrival and satisfaction guarranteed. W. W. Talley,
Rt. 4, Greenville, Ala.

FOR SALE—Mott's northern bred Italian queens that resist disease well. Those that resist disease must be hardy, prolific, and hustlers; they are gentle. Bees per pound. Plans "How to Introduce Queens and Increase," 25c. List free.
E. E. Mott, Glenwood, Mich.

YEAR old Italian queens, $6 00 a doz. Bees by the pound April and May delivery. Good bees, queens, service, and satisfaction always. Write for prices at once.
S. Mason, Hatch, New Mex.

QUEENS, Doolittle and Moore strain, also GOLDENS that are GOLDEN. One select unt. $1.00; 6, $4.25; 12, $8.00. Tested, $1.25.
Bees by the pound a specialty, One 1-lb. package, $1.25; one 2-lb., $2 25; large lots less, also nuclei and colonies. Ready March 15th. Booking orders now. Circular free.
J. E. Wing, 155 Schiele Ave, San Jose, Calif.

PHELPS' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y.

GOLDEN QUEENS that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00; Breeders, $5.00 and $10.00.
2Atf J. B. Brockwell, Barnetts, Va.

FOR SALE—200 stands of high grade bees, averaged 80 pounds of comb honey last season and 75 pounds the year before. Are all located in town and only one block from Main street. I am getting too many in town, and may eventually have to remove them; therefore, will sell 200 stands. Also for sale 10,000 pounds white clover comb honey.
G. F. Schilling, State Center, Iowa.

GOOD ITALIAN QUEENS—Tested, $1.00; untested, 75c. One-pound packages with untested queen, $2.25; 2-lb. package, $3.25. One-pound package with tested queen, $2 50; 2-lb. package, $3.50. Nuclei with untested queen, 2-frame, $3.25; 3-frame, $4.00. With tested queen, 2-frame, $3.50; 3-frame, $4.25. We can please you. G. W. Moon
1904 Park Ave., Little Rock, Ark.

GOLDEN Italian queens of the quality you need. Bred strictly to produce Golden bees that get the honey. Satisfaction guaranteed Untested, one, 75c; dozen, $8.25; 50, $32.50; 100, $60. Delivery after March 25. Bees by the pound nuclei or full colony.
L. J. Pfeiffer, Motor Rt. A, Los Gatos, Calif.

Meredosia, Ill., Jan. 22, 1917.
M. C. BERRY & Co., Hayneville, Ala.—Book my order for 6-2-lb. packages of your bees and queens. One of the 2-lb. packages I of bought of you last year made 200 pounds of honey, and several made 125 to 150 pounds each. I find your bees are not only hustlers but gentle. Fred May,
Meredosia, Ill.

FOR SALE—Three-band Italian bees and queens. Three-frame nuclei with this year's rearing queen, $3.00; without queen, $2.75. Three pounds of bees, $3 25. Young queens, 75c each. Our bees and queens last year gave general satisfaction, and this year we are in position to give stronger nuclei with a greater percent of brood than we did last year. If it is a bargain you are looking for send your order this way. Send your orders now and money when you want them shipped. Can begin shipping April 15. Bees are all in standard hives, Hoffman frames wired and full sheets of foundation. We guarantee bees to be free from disease. The following is an extract from one of our many satisfied customers: "Today, Aug. 16, I hived the second large swarm from the colony I started from a 3-frame nucleus I bought from you in June, and have about 40 pounds of surplus honey in hive." It pays to keep well bred stock whether it is cattle or bees. Name furnished on application.
Bees without queen: Three-frame nuclei, $2.25; 2-frame nuclei, $1.75; 1-frame nuclei, $1.25. Three-lb. bees, $3.25; 2-lb. bees, $2.25; 1-lb, $1.50. 3-band Italian queen, untested, 75c. Tested, $1.00. If queen is wanted, add price of queen.
The Hyde Bee Co., Floresville, Tex.

HONEY AND BEESWAX

WANTED—Honey in any lots from any point. The Honey King, Mahnomen, Minn.

FOR SALE—Fancy and No. 1 comb honey.
W. L. Ritter, Genoa, Ill.

WANTED—Comb, extracted honey, and beeswax. R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

WANTED—Beeswax at all times in any quantity, for cash or in exchange for supplies. Dadant & Sons, Hamilton, Ill.

WANTED — White extracted honey also light amber in any quantity. Send sample and lowest cash price.
E. B. Rosa, Monroe, Wis.

COMB HONEY our specialty. Highest market prices obtained. Consignments of Extracted Honey also solicited.
Albert Hurt & Co., New Orleans, La.

WANTED—Extracted white clover and light amber honey. Will buy in lots of 1000 pounds to a carload. I pay cash. State what you have and send sample with lowest price. Write. M. E. Eggers, Rt. 1, Eau Claire, Wis.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered.
The Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

SPECIAL offer of "The Domestic Beekeeper" six months for 25c worth of stamps. Send it today. Address "The Domestic Beekeeper," Northstar, Michigan.

HONEY WANTED—We are in the market for white and light amber grades of honey, also off grades which are suitable for baking. If you have such honey to offer, please send us sample, state the quantity you have, how packed and your lowest price for same.
Dadant & Sons, Hamilton, Ill.

SUPPLIES.

THE PERFECT Bee Frame Lifter. For descriptive circular address.
Ferd C. Ross, Box 194, Onawa, Iowa.

WANTED—Cheap honey extractor in good order. J. D. Sherwood, Ft. Madison, Iowa.

How to double your honey production at a small cost. Send 2c stamp for information. W. M. Budlong, 1523 14th Ave., Rockford, Ill.

FOR SALE—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside. Wash.

WANTED—Wax and old combs for cash or to make up on shares. "Best quality" foundation made and sold cheap in small lots.
J. J. Angus, Grand Haven, Mich

BEE-KEEPER, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
4Atf Paris, Tex.

GOOD second-hand 60-pound cans, 2 cans to the case, 35 cents per case in lots less than 25 cases. In lots of 25 cases or more, 30 cents per case. These prices are f. o. b. Cincinnati; terms cash with order.
C. H. W. Weber,
2146 Central Ave., Cincinnati, Ohio.

FOR SALE—50 new 10-frame hives with metal covers complete with frames nailed and wired at $1.75 each; in lots of 25 or more at $1.50 each; also 50 10-frame supers nailed and wired; hive and supers painted two coats at 60c each; for the supers in lots of 25 or more, 50c each. M. C. Silsbee Co., P. O. Chocton, R.F.D. 3, Haskinsville, N. Y.

"DAD" Townsend and his two sons are simply honey producers, the same as most of you are, nothing more. The boys produce the honey and "Dad" will tell you how they do it from month to month in "The Domestic Beekeeper." Send 25c in stamps and read "The Domestic Beekeeper" the first half of 1917 and see how the crop is produced. Address, "The Domestic Beekeeper," Northstar, Michigan.

SITUATIONS.

WANTED—Experienced bee-man for season 1917. Roscoe F Wixson,
Rt. 20, Dundee. N. Y.

WANTED—Position in an apiary with opportunity of buying or partnership.
E. Paillard, 165—3d St., San Francisco, Calif.

WANTED—A position with a beekeeper. I am 35 years old, have read the Bee Journal about 5 years, and have owned bees all my life. Will accept about $35 per month. Answer at once. C. S. Grape, Butler, Mo.

WANTED—Experienced queen-breeder and all-round bee-man, one that is a hustler and knows the business. Young unmarried man preferred. We furnish board and lodging. Write us your age, experience, etc., with lowest wages in first letter.
The Penn Co., Penn, Miss..

WANTED—To hear from a man who has had some experience with bees and wants experience in out-yard work. State age, weight, experience, wages and all particulars. A L. Coggshall, Groton, N. Y

THE 25C OFFER for the "Domestic Beekeeper" for the first half of 1917 is for *new* subscribers *only* as a trial subscription. Old subscribers willingly pay the regular price, which is a dollar a year. Send in the 25c in stamps at once before you forget it. Address "The Domestic Beekeeper," Northstar, Michigan..

HONEY LABELS

HONEY LABELS of the better sort. Not only the most attractive but also the lowest in price. Send today for free samples.
Liberty Pub. Co., Sta. D, Box 4H, Cleveland, O.

WANTED

TRADE—Safety writing desk, $75 rifle for bees. A. J. Graves, Ocheyedan, Iowa.

WANTED—Bees in lots of 25 to 250 colonies within 300 miles of Detroit. Correspondence with full particulars solicited.
A. W. Smith, Birmingham, Mich.

WANTED—No 15 extractor in good order.
Clarence F. Mara, Eastman, Wis.

BEES WANTED—State condition of hive and bees, also size of hives and number of colonies with price. Bee Ranch, Troy, S. Dak.

WANTED—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses.
Dadant & Sons, Hamilton, Ill.

MISCELLANEOUS

25 LADIES' COATS, bird dogs, wild ducks for sale or exchange for bees.
A. J. Graves, Ocheyedan, Iowa.

FOR SALE

FOR SALE—200 comb-honey supers, standard eight and ten frame size, painted, 50 and 40 cents. Write Chester Keister,
Rt. 1, Clarno, Wis.

FOR SALE—22 Caliber Winchester in fine condition; magazine holds 25 cartridges, $4.00. Leo Bentz, Rt. 4, Granton, Wis.

FOR SALE—Lewis 10-frame 4x5 supers, 100, used one season, cheap.
H. B. Allen, Cozad Nebr.

QUEENS ON APPROVAL—A select tested queen on approval. Send address for description etc. Bees and supplies for sale.
A. M. Applegate, Reynoldsville, Pa.

ST REGIS everbearing raspberry pedigree plants: 1 doz., 35c; 2 doz., 50c; 6 doz., $1.00, prepaid. Also strawberries, everbearing progressive pedigree, at raspberry prices.
L. H. Cline, Box 334, Marietta, Ohio.

PERFECTION Swarm Catcher; no ladder, no cutting of fruit trees. Bees take right to it; ladies can handle it. Directions with each order; shipping weight ½ pound. Price, $1.50. C. S. Keyes, Rt. 3, Salem, Oreg.

FOR SALE—Fifty 10-fr. Langstroth dovetailed size. T supers with separators, T tin follower boards, super springs, at 55c each for lot f. o. b. These supers have been used and are well nailed and painted one and two coats of paint. C. J. Canniford,
Rt. 7, Rockford, Ill.

HONEY SIGNS made to order. Send for price and description.
S. Goodlander, Wabash, Ind.

FOR SALE—5x7 view camera lenz, 4 double plate holders; kit for any size plate, carrying case, 2 trays, 2 printing frames, lantern, and other things used in making pictures, $10—a bargain. Matt Smith, Preston, Iowa.

FOR SALE—Oak Ridge Apiary, consisting of 150 colonies of bees, house, barn, work shop, cement chicken house, with 5½ acres of land and bearing fruit. Situated 2½ miles from town with two, R. R., one a divison point. 20 miles from a city of 80,000 inhabitants. Address, Box A 12, R. F. D. 3,
Chillicothe, Ill.

FOR SALE—Well established retail honey business in one of the largest industrial centers of the world. Reason for selling is my apiaries are too far away to work to advantage, so I wish to move near the bees and devote all my time to them. A rare opportunity for a live man with a little capital. Established 1910. John C. Bull,
811 So. Hohman St., Hammond, Indiana.
Phone 1023 J.

Alabama, N. Y., Jan. 22, 1917.
M. C. Berry & Co., Hayneville, Ala.—Book my order for 10 1-lb. packages of your bees with queens. The ten packages purchased of you last spring, although delayed in transit, and therefore taking five days to reach me, arrived in fine condition, not a cupful of dead bees in lot. They did well, more than paying for themselves the first season, and also went into winter quarters in fine condition. I have tried queens from several different places, and like yours best of all.
C. O. Board, Alabama, N. Y.

BEGINNING with the January number the name of the Review was changed to "The Domestic Beekeeper" and greatly enlarged, there now being 48 pages and cover; the pages being an inch larger each way. Listen, we want every reader of the American Bee Journal to see what a fine monthly we are now putting out, and we are going to offer a special bargain of six months' subscription to "The Domestic Beekeeper" for the first half of 1917 for the small sum of 25c. Just drop 25c worth of one or two cent stamps in a letter and write your name plainly and mail to "The Demestic Beekeeper," Northstar, Mich., and "The Domestic Beekeeper" will come to you regularly for six months.

SEND ONE DOLLAR FOR A TRIAL ORDER, AND WE WILL CREDIT THE AMOUNT ON ANY SUBSEQUENT ORDER OF FIVE DOLLARS OR MORE RECEIVED WITHIN 90 DAYS

Special Thirty-Day Offer

We send free samples on request, and are glad to do so. But we observe that selection from samples leads to copying and smothers the customer's individuality and limits the printer's field. Then, too, samples and postage add to the expense.

We Want to Print Something for YOU

Get the idea? Something that's YOURS, distinctive, individual, classy, modern, exclusive. It's the only way we can really show you what we can do with your order.

SEND A DOLLAR BILL

to us with your name, your post-office, and whether you produce or sell comb or extracted honey, bees, or supplies, and any other information or instructions, and we will send you in return 50 good quality envelopes and 50 sheets of good letter paper, ruled or unruled, all finely printed in two colors, all prepaid. Order today.

AMERICAN BEE JOURNAL, Hamilton, Ill.

Crop Reports and Market Conditions

In order to get this page started, we sent out from this office several hundred letters to subscribers in which we asked the following questions:

1. Condition of bees and amount of loss?
2. Honey plant conditions and prospects?
3. Are beekeepers going to increase in 1917?
4. Are many turning from comb to extracted honey?
5. How about supply of honey, comb and extracted and does demand exceed supply?

A summary of replies is given as follows:

Condition of Bees.

Although a little early except in the South to determine accurately, losses so far are as follows: In New England bees have wintered fine, better than usual, and in New York and other Central Atlantic states about normal. Throughout the Southeast losses are larger than average, ranging from 10 to 25% and condition of bees is below normal owing to backward weather and poor wintering with some starvation. Throughout the Central states there is little loss—less than average, although this has been a harder winter than usual. Idaho and Wyoming report that the loss will be above normal while in Montana and Colorado, about normal. Arizona and New Mexico report practically no loss as do Washington and Northern California. In Texas the loss is normal and in California, more than normal owing to a very peculiar and trying winter.

Condition of Plants.

In most parts it is too early to determine this. Heavy snows in the north half of the country have protected the clovers and given them abundant moisture. It has been too dry in Southern Illinois, Southern Iowa, Kansas, Missouri, and Tennessee and clover may suffer. In the Southeast heavy frosts have destroyed the early blooms and the condition at present is discouraging. The West has had abundant snows and prospects are above average. Texas reports it too dry and the horsemint flow may suffer; other plants normal. California is also very dry and reports indicate that the condition is from 60 to 90% of normal.

Increase.

A few large producers state that they will increase largely during 1917 if the season is favorable. In most instances, however, the increase will be normal except that beginners, influenced by large crops last year will make considerable increase.

Comb to Extract.

There is a general trend in favor of extracted honey. Two large producers in Michigan and Wisconsin are dropping comb honey to take up extracted. Many more large producers producing a mixed crop will devote more time to extracted in 1917. The bulk of large producers, however, who are equipped for either kind of honey will continue as before. The change from one to the other, however, should be noticeable.

The Honey Market.

In practically every instance, reports agree that extracted honey is "wiped up clean" and the demand far exceeds the supply. It is agreeable to note that in several instances, this was laid to the increase in local sales. Several reports are to the effect that there is a demand for carloads of honey with no supply available. One Government official a short time ago made the statement that there was market for 80 cars of honey going unsupplied in New York City alone. A recent letter from a prominent broker there states that the allies are buying in carloads to supply to their soldiers. He says that he could sell unlimited amounts of extracted honey now at any reasonable price. What little extracted honey there is left in the country is either in the hands of bottlers to supply their trade or in the hands of beekeepers for keeping the home trade supplied.

Comb honey, on the other hand, is easily obtained, though it is likely that conditions are easier than a year ago. In the east and central west, beekeepers are fairly well sold out, though many small lots are still offered. California seems to have disposed of most of its comb-honey as has most localities in the west, though many times at sacrifice prices. One locality in Montana reports 2300 cases of comb still unsold, and one in Colorado 3,000 cases which they wish to dispose of. The large markets are well supplied. In some instances there is still comb-honey of the 1915 crop which is partly granulated.

Texas and the balance of the South have sold out all stocks of bulk-comb and other honeys and the demand far exceeds the supply.

Depending on war and other conditions, there is every likelihood that extracted honey should range higher in price than in 1916 especially if every producer makes special effort to supply the local trade and to increase it. A million beekeepers each selling 100 pounds more locally would withdraw many carloads from the big markets.

Comb-honey cannot well get lower in price than at present and conditions should tend to improve.

Furnishing Reports.

Every reader is urged to send reports of conditions for our next number. The more reports there are, the more valuable should be the summary from them. See editorials for particulars.

Write on a postcard, number your answers, and address MARKET EDITOR, American Bee Journal, HAMILTON, ILLINOIS.

HONEY AND BEESWAX

CHICAGO, Feb. 19.—During the past month honey has sold quite well. Especially is this true of the extracted, and it would appear that there is not much more to be marketed.

Comb honey has moved off freely, and stocks are being reduced to a moderate quantity. Indications are that there will not be much carried over in this market.

Prices for white extracted honey are 10c per pound; amber, 8@9c per pound. Comb honey, 14c per pound for the best grades and the light ambers 12@13c per pound. Very little of the darker grades on the market, but sell readily at from 1@2 per pound less.

Beeswax is very firm, and bringing 33@35 per pound. R. A BURNETT & CO.

KANSAS CITY, MO., Feb. 15.—The honey market seems a little better. No. 1 comb honey is firm at $2.75, and No. 2 at around $2.50. The extracted honey market continues to advance and is firm at 7½@9½c a pound, according to the quality and kind of honey. There is plenty of comb honey on the market, but extracted is scarce. Beeswax is selling at 28@30c a pound, according to quality. C. C. CLEMONS PRODUCE COMPANY.

SAN ANTONIO, Feb. 15.—There is little or no honey offered in quantities for shipment from Texas at this time. Nearly all surplus in hands of producers has been marketed. Extracted, according to color and flavor is bringing 8@10c in wholesale markets. Beeswax is very firm. We are paying 27c cash and 30c exchange.

SOUTHWESTERN BEE CO.

DENVER, Colo., Feb. 18.—The demand for comb honey in carload lots is improving. We are quoting the following jobbing prices: Comb honey, fancy white, $2.84; No. 1 white $2.70; No. 2, $2.57; per pound of 24 sections. Extracted, white, per pound, 9@9½c; light amber, 8½@9c per pound. We are always in the market for beeswax; for clean yellow wax we are paying 30c per pound in cash and 32c in trade, delivered here in Denver.

THE COLO. HONEY PRODUCERS' ASS'N.
F. Rauchfuss, *Mgr.*

CHICAGO, Feb. 18.—Our market on honey is a little more active, and as a matter of fact we created a demand for it by reducing the price and advertising honey liberally. We have advertised the honey in the trade papers, and also have honey signs on both sides of our ten wagons, so as to push and create a demand for honey.

We are selling now on an average of 100 to 125 cases a day; there was a time that we would hardly sell 40 to 50 cases a day. Monday, Tuesday and Wednesday of this week we sold 700 cases. At the rate we are going we will be cleaned up in less than 60 days. Prices on double deck glass fronts, $3.00; flat crates glass fronts, $2.60 to $2.75; this is for the highest class of honey. We have some light amber and dark honey that is beginning to show candy that we are obliged to sell at reduced prices. Extracted honey is selling from 9@10c. Beeswax is firm at 30@32c. DANIEL J. COYNE.

Gray Caucasians

Early breeders; great honey gatherers; cap beautifully white, great comb builders; very prolific; gentle; hardy; good winterers. Untested, $1.00. Select untested, $1.25. Tested, $1.50. Select Tested, $2.00. The best all-purpose bee.

H. W. FULMER, Box 10, Andalusia, Pa.

FOREHAND'S QUEENS

15 LBS. SURPLUS ☜ ***Which Colony is Yours, Mr. Beekeeper?*** ☞ **150 LBS. SURPLUS**

How many of you were disappointed last season when you harvested your honey crop? You can make every colony a good one. WHY NOT? Just head it with a young vigorous three-banded Italian queen. She will cost you only 75 cents, just three pounds of honey. You can easily make a gain of sixty pounds over the inferior colony, which is a net gain of $3.75. Good pay for introducing one queen, not considering the increased value of the colony. Spring will soon be here, the time to requeen that colony that has the bad queen. Can you spend your time more profitably now than deciding what stock and where to purchase your early queens? Give us a trial. We breed only the pure three-band queens. All our yards are pure, so you take no risk in getting a hybrid. Four reasons why you should use our queens: 1st. They are first-class honey gatherers. 2d. They are vigorous and highly resistant to foulbrood. 3d. The imported bees (which ours are reared from) are among the gentlest bees known. 4th. The most modern and learned bee-men in the world today use the three-band. WHY? Because they are the best.

We have had over 25 years' experience in rearing queens; having started with Doolittle and such men. We have 1000 nuclei, which makes it possible to fill orders promptly. Three expert queen-breeders have charge of these nuclei; so we do not over-work, which gives us ample time to improve our stock. None but first-class queens are mailed. We give a first-class queen at a medium price, and we guarantee perfect satisfaction and safe delivery.

	1	6	12		1	6	12
Untested.....	$ .75	$ 4.25	$ 8.00	Tested.....	$1.50	$ 8.75	$17.00
Select untested.....	1.00	4.75	9.00	Select tested.....	2.00	11.00	20.00

Write for circular giving general description. Mail all orders to

W. J. FOREHAND & SONS, Ft. Deposit, Ala.

GOOD USED PIANOS AT CLEARING SALE PRICES SOLD

UNDER WARRANTY AND SHIPPED ON APPROVAL AT

OUR RISK FOR ALL FREIGHTS AND HANDLING CHARGES

George W. Lyons Studio, small size; $75.
Ernest Gabler & Bro., upright, rosewood, medium size, excellent tone; $85.
Pease Piano Co., upright, rosewood; $100.
Smith & Barnes, upright, mahogany; $115.
Mason & Hamlin, upright, ebonized, dull finish; $125.
Sheraton upright, mahogany, nearly new; $135.
Empire Piano Co., upright, mahogany, superior tone; $150.
Fischer upright, golden oak, fine condition; $175.
Fischer upright, mahogany, like new; $200.
Story & Clark, upright, elaborate style, mahogany; $225.
Knabe, upright, mahogany, perfect condition; $250.
Behr Bros., upright, mahogany, slightly used; $275.
Knabe, upright, mahogany, Colonial style; $300.
Steinway, upright, mahogany; $350.

Cash prices; but easy payment terms at 6 percent interest if desired.

For further information write World's Largest Music House.

LYON & HEALY CHICAGO, ILLINOIS

Paint Without Oil

Remarkable Discovery that Cuts Down the Cost of Paint Seventy-Five Percent

A Free Trial Package is Mailed to Everyone Who Writes

A. L. Rice, a prominent manufacturer of Adams, N. Y., has discovered a process of making a new kind of paint without the use of oil. He calls it Powdrpaint. It comes in the form of a dry powder and all that is required is cold water to make a paint weather proof, fire proof, sanitary and durable for outside or inside painting. It is the cement principle applied to paint. It adheres to any surface, wood, stone or brick, spreads and looks like oil paint and costs about one-fourth as much.

Write to Mr. A. L. Rice, Manufacturer, 23 North Street, Adams, N. Y., and he will send you a free trial package, also color card and full information showing you how you can save a good many dollars. Write today.

20 Packets Seeds—10c.

We want every reader to test **"HARRIS SEEDS THAT HUSTLE."** Send 10c. now—before you forget for this mammoth collection. We send you 20 separate packets finest varieties—one each—of **Beets, Carrot, Cabbage, Celery, Cucumber, Lettuce, Cress, Muskmelon, Watermelon, Onion, Parsley, Parsnip, Radish, Salsify, Spinach, Tomato, Mixed Poppies, Giant Cosmos, Double Jap Calendula** and **Children's Botanical Garden,** a curiosity collection of flower seeds. With this collection we send rebate check for 10c. and big catalog of world's finest seeds.

HARRIS BROS. SEED CO., 384 **Main St., Mt. Pleasant, Mich.**

Why Not Get What You Want, And When You Want It?

The Atchley Queens and Bees need no recommendation to the beekeeping world. They have been buying them for FORTY YEARS, AND ARE STILL DOING IT.

BOOK YOUR ORDERS NOW!

One-pound package, $1.40 each; 25 for $32.50; 100 for $125. Two-pound packages, $2.25 each; 25 for $52.50; 100 for $210. Two-frame nuclei, $2.30 each; three-frame, $3.25 each. No queens. Untested queens, Italian or Carniolan, $1.00 each, or $10 per dozen; 100 for $70. A big lot of fine tested queens. Cheap, write for prices. Prices on bees and queens in large lots quoted on application.

WM. ATCHLEY, Mathis, Texas

The Texas Bee and Honey Man

The Double-Walled Massie Bee-Hive

Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate

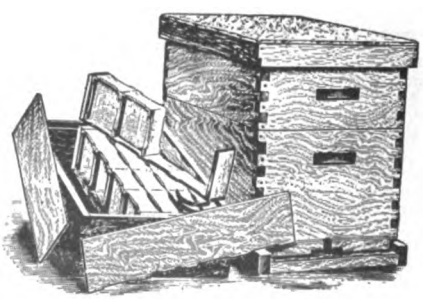
THE MASSIE HIVE
For Comb or Extracted Honey

Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracting Frames made from White Pine

VENTILATED BOTTOM

Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee-supply business has shown us that the **Massie is the very best hive,** and testimonials to this effect are received daily from those who are using this hive.



The Dovetailed Hive for Comb Honey

Why Not Give Us a Trial Order? **Satisfaction Fully Guaranteed**

We are also extensive manufacturers of **Dovetailed Hives and all other Apiarian Supplies.** If you are in the market for supplies be sure to get our prices before buying elsewhere. We will mail our large illustrated catalog and **special price list** to any one upon request

KRETCHMER MFG. COMPANY, 110 3d St. Council Bluffs, Iowa

NOTICE TO BEEKEEPERS!

We are now booking orders for our 3-banded Italian queens and combless packages, and will furnish them during April, May and June at the following prices:

Prices of Combless Packages Without Queens*

Size 1-lb. each	$1.35
" 2-lb. "	2.35
" 3 lb. "	3.35

Three-Banded Italian Queens for April, May and June

Untested, each	$ 1.00	Tested each	$ 1.50
" 6	4.50	" 6	8.00
" 12	8.00	" 12	15.00
" 100	65.00	" 100	100.00

Select tested, $2.00; breeders, $3.00

* In lots of over one dozen packages get our prices. If queens are wanted, add wholesale price and state kind.

We have just invented a new style cage for shipping bees, for which patent has been applied. This cage allows the queen to lay while on the trip, which gives the purchaser from three to seven days advantage of the old style cage. It is almost equal to a colony of bees. With every order for 100 pounds of bees we will give one of these packages with a tested queen free. We only have one dozen of these cages, and will not put them on the market till 1918, as our stock of cages was made up before we evolved the new cage.

Our Mr. A. B Marchant has retired from the production of honey and will manage our yards for the package and queen trade. Therefore, we will be in a better position to fill all orders with dispatch. Having doubled our capacity we believe we can fill all orders, the day they are due We have introduced new blood in all our yards, and we have a strain of bees second to none. Our packages are shipped the same day they are caged. Our bees for our packages are all reared above an excluder; therefore, we ship nothing but young bees, as young bees stand the trip better than older ones. We guarantee freedom from all diseases and safe arrival in the United States and Canada. Place your orders early, as first comes first served Write for prices on large orders.

MARCHANT BROS., Union Springs, Ala.

PURE MATING GUARANTEED—QUALITY FIRST

I am better equipped to take care of all orders, both LARGE AND SMALL, having located my queen and package business in Georgia. Our mail and express service is excellent, having 24 out-going trains DAILY—will make delivery same day order received.

Will be glad to hear from parties wanting LARGE QUANTITIES, as I am prepared to handle any size orders—will be glad to furnish sample of my combless package—will guarantee safe arrival in United States and Canada. Get my prices on 100-pound lots and over, my price will make you order from me.

Prices on Queens for March 15th to May 1st delivery.

	1	6	12
Untested	$1.50	$ 7 50	$12 00
Tested	2.00	10 50	18.00
Select Tested	3 00	15 00	24.00

Breeders, $5.00 and $10.00

Prices for bees by the pound without Queen begin April 15th.

	1	6	12
1-pound	$1 50	$ 8.00	$15.00
2-pound	2.50	14.00	27.00
3 pound	3.25	18.50	35.00

Prices of nuclei without Queens begin shipping April 15th.

	1	6	12
1-frame	$2.00	$10 50	$18.00
2-frame	2.50	12.00	22 00
3-frame	3.50	20.00	37.00
5-frame	5.00	23.00	44.00

J. E. MARCHANT BEE & HONEY COMPANY. Columbus, Georgia

TYPEWRITER SENSATION

$2.50 a Month Buys L. C. Smith Visible Writing

Perfect machines only of standard size with keyboard of standard universal arrangement—has Backspacer—Tabulator—two color ribbon—Ball Bearing construction—every operating convenience. **Five Days' Free Trial.** Fully guaranteed. Catalog and special price free.

H. A. SMITH, 314–231 North Fifth Avenue, Chicago, Illinois

CIRCULAR SAW MANDRELS AND EMERY WHEEL STANDS

Mandrels with boxes and pulley complete for bolting our frame. Three sizes. Circulars.

CHAS. A. HENRY, Eden, N. Y.

FOR SALE 10,000 POUNDS OF BEES SPRING DELIVERY

20 Years of Select Breeding Gives Us Bees of Highest Quality

BEES FOR HONEY PRODUCTION—BEES OF UNUSUAL VITALITY

M. C. BERRY & CO., Hayneville, Ala.

Gentlemen:—Will want more of your three-pound packages of bees with queens the coming spring. The two I bought of you last May did all right. One package made 185 sections of honey and gave one swarm, and the other made 206 sections and gave two swarms. I am well pleased. MELVIN WYSONG, KIMMELL, IND.

SWARMS OF BEES BY THE POUND WITHOUT QUEENS READY APRIL 1

1-lb. pkgs. $1.25 each; 25 to 50 pkgs. $1.22½ each; 50 to 100 pkgs. $1.20 each; 2-lb. pkgs. $2.25 each; 25 to 50 pkgs. $2.22½ each; 50 to 100 and up, $2.20 each; 3-lb. pkgs $3.25 each; 25 to 50 pkgs. $3.22½ each; 50 to 100 and up, $3.20 each.

GOLDEN AND 3-BAND ITALIAN QUEENS READY APRIL 1

Untested.....75 cts. each; $65.00 per 100 | Tested.....$1.25 each; $110.00 per 100
Select untested.....90 cts. " ; $75.00 " 100 | Select tested 1 50 " 125 00 " 100

Write for descriptive price list. Let us book your order now. Only a small deposit required.

LARGEST AND MOST SUCCESSFUL SHIPPERS OF BEES IN PACKAGES

M. C. BERRY & COMPANY, Hayneville, Alabama, U. S. A.

FOR FIFTY YEARS

QUALITY

Has been the one greatest aim in the manufacture of Root bee supplies. Have we made good? Have we reached our mark? Here is the test. Take a

ROOT BEE-HIVE
BEE-SMOKER
HONEY-EXTRACTOR

Or any other specialty turned out in our factory, and after it has been

USED ONE YEAR
FIVE YEARS
TEN YEARS

Compare it with one of any other make. Then see if the Root isn't best by test.

WHY? ROOT QUALITY
plus
ROOT SERVICE

Give greatest satisfaction in the long run.

You can pay for your supplies for the coming season with beeswax. We are in the market for any quantity. Send us samples with prices of what you have to offer.

THE A. I. ROOT COMPANY

MEDINA, OHIO

MARSHFIELD GOODS

BEEKEEPERS:—

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality; best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section-holders** and **shipping cases.**

Our catalog is free for the asking.

MARSHFIELD MFG. COMPANY, Marshfield, Wisconsin

EARLY ORDER DISCOUNTS WILL

Pay You to Buy Bee-Supplies Now

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.

DON'T WAIT TILL SPRING

Before having your beeswax made into foundation or to buy supplies. Prices were never more unsettled. Better take advantage of present low prices and early order discounts, by ordering now.

Write for prices and discounts.

GUS DITTMER COMPANY
Augusta, Wisconsin

PORTER BEE ESCAPE

SAVES HONEY TIME MONEY

For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Illinois, U. S. A.
Please mention Am. Bee Journal when writing.

FREEMAN'S FARMER North Yakima, Wash.

Successor to Northwest Farm and Home
60 YEARS OLD

If you want a descriptive and agricultural magazine, it will inform you all about the methods in the Pacific Northwest.
Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

THREE-BANDED ITALIANS

Will be ready by April 1, to begin mailing untested queens of my exceptionally vigorous strain of Italian bees. They are gentle, prolific, and the best of honey gatherers. Give them a trial and I am sure you will be a regular customer hereafter. Will book orders now. Circular free. Safe arrival guaranteed in the United States and Canada. Untested, $1.00; 6, $5.00; 12, $9.00. Tested $1.25; 6, $6.50; 12, $12.50.

JOHN G. MILLER
723 C St., Corpus Christi, Texas

NOW IS THE TIME

Prepare Now for Next Season

Do not wait until your bees are out of winter quarters to order your goods.

PROSPECTS FOR 1917

Are for another big one. Lotz Sections are the best; they are perfect in workmanship, quality and material. All guaranteed. We want you on our mailing list.

Send for 1917 Catalog

AUGUST LOTZ COMPANY
Boyd, Wisconsin

ESTABLISHED 1885

We are still furnishing bee-hives made of white pine lumber; they are well made and will last. Our large catalog, giving full particulars about all bee supplies is free for the asking. Beeswax taken in exchange for supplies or cash.

J. NEBEL & SON SUPPLY COMPANY
High Hill, Montg. Co., Missouri

LEATHER COLORED ITALIANS

About April 1st I will again be ready to mail untested queens of my fine strain of Italians. I breed no other race. Choice tested and breeding queens at all times. Insure against a possible disappointment by ordering early. Satisfaction guaranteed. Circular free. Untested queens $1.00 each; doz. $9.00. Choice tested, $1.50 each. Breeder, $3.00 to $5.00 each.

C. S. ENGLE, Beeville, Bee Co., Texas

IMPORTANT NOTICE to LUMBER USERS:

THE SOUTHERN CYPRESS MANUFACTURERS' ASSOCIATION HEREBY INFORMS YOU THAT ALL ***CYPRESS*** *NOW AND HEREAFTER SHIPPED BY MILLS WHICH ARE MEMBERS OF THE ASSOCIATION WILL BE*

IDENTIFIED BY THIS MARK

TRADE MARK REG. U.S. PAT. OFFICE

This registered trade-mark will be, henceforth,

YOUR INSURANCE POLICY OF QUALITY.

It will appear stamped (mechanically and ineradicably) on one end, or both ends, of EVERY board and timber of

CYPRESS "THE WOOD ETERNAL."

CYPRESS FLOORING, SIDING, MOULDING AND SHINGLES, which come in bundles, will bear the same mark on EVERY BUNDLE.

The legal right to apply this epoch-making symbol of strict
RESPONSIBILITY IN LUMBER MAKING AND SELLING

is, of course, restricted to those Cypress mills which, by their membership in the Southern Cypress Manufacturers' Association, attest their devotion to its Principles of SERVICE to the CONSUMER and their foresighted appreciation of its open and progressive educational methods.

Only mills cutting "Tide-water" Cypress (within about 200 miles of the coast) are eligible for membership. (Cypress grown elsewhere has less of the "Eternal" quality.)

Only mills which subscribe to the Association's standard of scrupulous care in methods of MANUFACTURE, INTEGRITY OF GRADING and ACCURACY OF COUNT can belong to the Association. These responsible "A-1" mills the Association now licenses to

CERTIFY THEIR CYPRESS **by applying the registered trade-mark with their identifying number inserted.**

TRADE MARK REG. U.S. PAT. OFFICE

BY THIS MARK YOU KNOW THAT IT'S CYPRESS, "THE WOOD ETERNAL," AND WORTHY OF YOUR FAITH. IT IS WELL TO INSIST ON SEEING THIS TRADE-MARK ON EVERY BOARD OFFERED AS "CYPRESS."

TRADE MARK REG. U.S. PAT. OFFICE

Let our ALL-ROUND HELPS DEPARTMENT help YOU *MORE*. Our entire resources are at your service with Reliable Counsel.

Southern Cypress Manufacturers' Association

1251 HIBERNIA BANK BLDG., NEW ORLEANS, LA., or 1251 HEARD NATIONAL BANK BLDG., JACKSONVILLE, FLA.

INSIST ON TRADE-MARKED CYPRESS AT YOUR LOCAL LUMBER DEALER'S. IF HE HASN'T IT, *LET US KNOW.*

AMERICAN BEE JOURNAL

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APRIL, 1917

Prune Orchards in Blossom in the Santa Clara Valley, California

ARCHDEKIN'S FINE ITALIAN QUEENS AND COMBLESS BEES

April, May, June queens warranted purely mated, $1.00 each; six for $5.00; per doz., $9.00. Bees per lb. $1.25. With untested queen, $2.00 per lb. I have originated a pkg. light but strong; saves you bees and express. My guarantee is prompt shipment, safe arrival, perfect satisfaction. No disease. Small deposit books your order.

J. F. Archdekin Bordelonville, La.

WESTERN BEEKEEPERS!

We handle the finest line of Bee Supplies. Send for our 68 page catalog. Our prices will interest you.

The Colorado Honey-Producers' Association

1424 Market Street, Denver, Colo.

BARNES' Foot-Power Machinery

Read what J. I. Parent of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog & price-list free

W. F. & JOHN BARNES

995 Ruby St., ROCKFORD, ILLINOIS.

BUY

THE FAMOUS DAVIS GOLDENS

And get big yields from gentle bees. Write for circular and Price list.

BEN G. DAVIS

Spring Hill, Tennessee

"ROUGH ON RATS" ends RATS, MICE, Bugs, Don't Die in the House. Unbeatable Exterminator. *Ends* Prairie Dogs, Gophers, Ground Hogs, Chipmunks, Weasels, Squirrels, Crows, Hawks, etc. The Recognized Standard Exterminator at Drug & Country Stores. Economy Sizes 25c, 60c, Small 15c. Used the World Over. Used by U. S. Gov't. Rough on Rats Never Fails. *Refuse ALL Substitutes.*

POULTRY, FRUIT, BEE PAPER COMBINATION $1.50

Poultry and Fruit are allied pursuits for the beekeeper. Here is a special combination of three papers which gives excellent reading at a low cost:

The Fruit Grower	.50
American Poultry Advocate	.50
American Bee Journal	$1.00

Our price for all three for one year is only $1.50. Or if you want two poultry papers, add 25c to the above offer and get your choice of the following one year:

Reliable Poultry Journal, Poultry Success, American Poultry World, Big Four Poultry Journal, Poultry Tribune, Poultry Item.

Send all orders to

AMERICAN BEE JOURNAL, Hamilton, Ill

SAVE MONEY

By buying your supplies of me. All kinds of Bee Supplies and Berry Baskets, Crates, etc. Send for new **1917** list free.

W. D. SOPER

325 So. Park Ave., Jackson, Mich.

BEES AND QUEENS, GOLDENS AND LEATHER COLORED FOR 1917

Canadian and United States Trade

We are now booking deliveries in May, June and July at the following prices, viz.:

FROM PENN, MISS.	1	6	12	25 to 100
Prices 1 and over				
Untested	$ .85	$4.50	$8 00	$ .65 each
Warranted	1.10	5.00	9.50	.75 "
Tested	1.50	7 50	13.50	1.05 "
Breeders	3.00 to $10.00 each.			

FROM TORONTO, ONTARIO.	1	6	12	25 to 100
	$1 00	$4 80	$ 9 25	$ .75 each
	1.35	5.80	10.75	.85 "
	1.75	7.80	14 75	1.15 "
	3.00 to $10.00 each.			

POUND PACKAGES WITH UNTESTED QUEENS

FROM PENN, MISS.	1 to 5 each	6 to 25 each	over each
1-pound and Queen	$2.25	$2.00	$1.90
2-pound and Queen	3.00	2 75	2.65

FROM TORONTO, ONTARIO	1 to 5 each	6 to 25 each	50 over each
	$3 00	$2.75	$2.65
	4.50	4.25	4.00

Prices on full colonies and nuclei quoted on request.

We supply THE ROOT CANADIAN HOUSE, 54 WOLSELEY ST., TORONTO ONTARIO, CANADA, with large shipments almost daily during the above months, frequently moving almost a car of packages to them at a time. This is the most successful way of serving Canadian trade. This firm has our entire Agency for the Dominion, and all Canadian business should be addressed to them unless you wish shipments made direct from Penn, Miss., address us.

At the time of booking order, remit 10 percent as a form of good faith on your part with balance to be remitted a few days prior to date of shipment. We move orders promptly. Our references, any Mercantile Agency, The A. I. Root Co., or American Bee Journal.

When you deal with us it means satisfaction. Health Certificates furnished with each and every shipment of bees. This assures you that no delays will take place. Safe delivery guaranteed. If interested in bee-hive material, our catalog will be sent on request.

THE PENN COMPANY, PENN, MISS., U. S. A.

Bee Supply Department

Orders shipped day received

Our warerooms are loaded with Lewis Beeware

Everything at factory prices

Send for catalog

Wax Rendering Department

We do perfect wax rendering. It will pay every Beekeeper to gather up all his old combs and cappings and ship to us. We charge 5c a pound for the wax we render and pay the highest cash or trade price.

THE FRED W. MUTH COMPANY

(The firm the Busy Bees work for)

204 Walnut Street, - - CINCINNATI OHIO

The CANADIAN HORTICULTURIST AND BEEKEEPER

The only bee publication in Canada

It is the official organ of the Ontario Beekeepers' Association, and has incorporated with it the former Canadian Bee Journal.

Beekeeping and Horticulture in its various branches are effectively combined to form a live, attractive, and practical monthly magazine.

Well illustrated and up-to-date. Subsciption price postpaid.

Canada, $1.00 a year. United States, $1.25 a year. Foreign, $1.50 a year

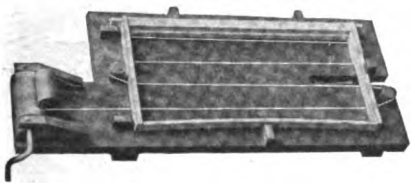
Sample copy sent free on request.

The Horticultural Publishing Co., Limited, Peterboro, Ont., Can.

Poultry Supplies

Poultry supplies of all kinds, best automatic grain feeders, fountains, feed troughs, dry mash hoppers, bone mills, exhibition and shipping coops, leg bands, shell, grit, bone, meat, feeds, and remedies ANYTHING YOU WANT. Also Pigeon, Kennel and Bee Supplies. Circular free.

Eureka Supply House
Box B-403, - Aurora, Illinois



PATENTED
WRIGHT'S FRAME-WIRING DEVICE

Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, $2.50, postpaid in U. S. A.
G. W. Wright Company, Azusa, Calif.

Why Not Get What You Want, And When You Want It?

The Atchley Queens and Bees need no recommendation to the beekeeping world. They have been buying them for FORTY YEARS, AND ARE STILL DOING IT.

BOOK YOUR ORDERS NOW!

One-pound package, $1.40 each; 25 for $32.50; 100 for $125. Two-pound packages, $2.25 each; 25 for $52.50; 100 for $210. Two-frame nuclei, $2.30 each; three-frame, $3.25 each. No queens. Untested queens, Italian or Carniolan, $1.00 each, or $10 per dozen; 100 for $70. A big lot of fine tested queens. Cheap, write for prices. Prices on bees and queens in large lots quoted on application.

WM. ATCHLEY, Mathis, Texas
The Texas Bee and Honey Man

FILMS DEVELOPED

All roll films developed for 10 cents. We return them the same day. Everything in the KODAK Line. Send for catalog.

F. M. ALEXANDER
Atlantic, Iowa

CAUCASIANS

I am the Pioneer Breeder of pure Grey Caucasian bees. Queens, nuclei, and pound packages.

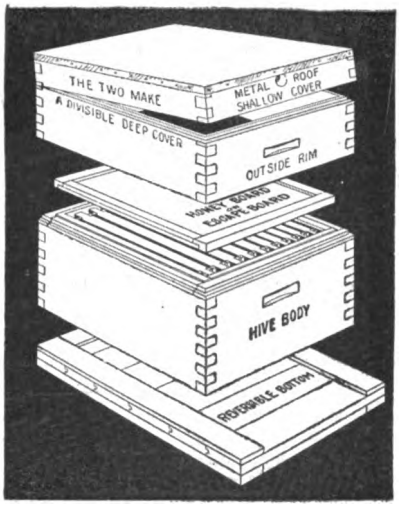
A. D. D. WOOD
Box 61, Lansing, Michigan

PROTECTION HIVES

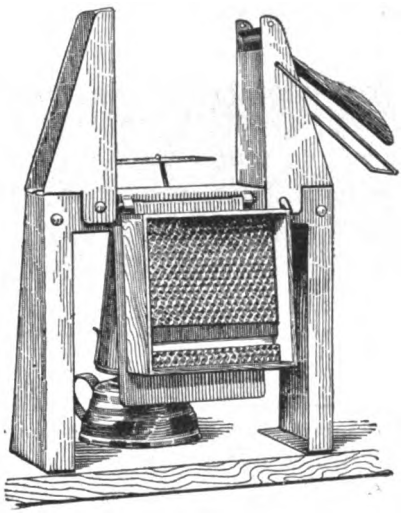
Price of five hives with outside rims, $13 75; without rims, $12.00 f. o. b. Grand Rapids, Mich. Delivered to any station in the U. S. A. east of the Mississippi and north of the Ohio Rivers with outside rims, $15.00.

Mr. Jay Cowing, of Jenison, Mich., has 235 of these hives in use, and 40 in single-wall hives; his 1916 increase. He has just purchased another lot of Protection Hives, and says the approximate extra cost of $1.00 per hive over single-wall hives is the best kind of an investment for him. He is a beekeeper of more than 15 years' experience, and his 1916 crop was 580 cases of 32 sections, each fancy comb honey. His winter and spring losses of bees from one cause and another has never exceeded 10 per cent, even in the most severe winters, like 1908–09 and 1911–12. Mr Cowing bought some of the first Protection Hives offered on the market, and they have proven so satisfactory with him that he is still buying them.

They are double wall with air spaces or packing as you may prefer. The outer wall is made of ⅞ material and will last a life time. Send for a catalog and special circulars, showing large illustrations,



A. G. WOODMAN CO., Grand Rapids, Michigan



SECTION FIXER

A combined section press and foundation fastener of pressed steel construction. It folds the section and puts in top and bottom starters all at one handling, thus saving a great amount of labor. With the top and bottom starters the comb is firmly attached to all four sides, a requirement to grade fancy. Increase the value of your crop by this method.

H. W. Schultz, of Middleton, Mich., in writing us says: "Your Section Fixer is the best yet; can put up 150 sections per hour with top and bottom starters." Price with lamp $2.75. Shipping weight 5 lbs. Postage extra. Send for special circular, fully describing this machine.

A. G. WOODMAN CO.,

Grand Rapids, Michigan

TIN HONEY PACKAGES

A local wholesale house secured a carload of tin plate in September that was promised for April. Conditions are now even worse. When it is necessary to order tin plate a year or more in advance of the time it is wanted for use, advances in prices must be expected. The highest bidder will get the stock.

Freight at this time is very slow and uncertain. Prices are liable to advance. It would be a wise thing to secure your packages for the 1917 crop. Our three-year contract is giving us some advantage over general market quotations. Send us a list of your requirements. We can supply the following

60-pound cans, one and two in a case

Friction Top Tins

	2 lb. Cans,	2½ lb. Cans,	3 lb. Cans,	5 lb. Pails,	10 lb. Pails
Cases holding	24	24	....	12	6
Crates holding	....	....	....	50	50
Crates holding	100	....	100	100	100
Crates holding	603	450	....	203	113

A. G. Woodman Co., Grand Rapids, Mich.

BEE-SUPPLIES of all kinds; catalog free. Send 25c for 90-page book on how to handle bees. Discount for early orders. Honey for sale.
J. W. ROUSE, Mexico, Missouri

SELECT ITALIAN BEES
by the pound. Nuclei QUEENS. 1917 prices on request. Write,
J. B. HOLLOPETER, Rockton, Pa.

3-Band Italian QUEENS

PRODUCE WORKERS

That fill the supers quickly with honey nice and thick. They have won a world-wide reputation for honey gathering, hardiness, and gentleness. Untested, 75c; 6, $4.00, 12, $7.50. Tested, $1.50; 6, $8.00; 12, $15. I guarantee that all queens will reach you in good condition and give satisfaction.

S. D. CHEATHAM, Rt. 2, Greenville Ala.

DADANT'S FOUNDATION

DADANT'S FOUNDATION

DADANT'S FOUNDATION

WE ANNOUNCE AN ADVANCE

Of 5c per pound on comb-foundation. This advance applies to all our 1917 price lists. On account of the high price of beeswax, we are compelled to withdraw our former quotations.

For beeswax, we will now pay 35c in cash or 37c in trade f. o. b. Hamilton, or Keokuk, Iowa. Prices of beeswax and foundation are, of course, subject to change without notice.

Save your beeswax and ship it to us to be worked into foundation for you. Send us your old combs. They are worth good money now, and we will get every ounce of wax out of them and pay you the above prices for your share of the wax.

DADANT & SONS,

HAMILTON, ILLINOIS.

The Proof of the Pudding Is In the Eating

The quality of Murry's queens and bees is shown in the increasing demand for them. Capacity of queen yards doubled last year and again this season. Advance orders up to March 5th nearly equal to total sales last season. Why? Because they get a square deal.

Three-banded Italians and Golden Italians. Orders filled by return mail. Safe arrival and satisfaction guarranteed. No disease. Health certificate with each shipment of bees or queens.

Queens	1	6	12	1	6	12	100
PRICES	March 15th to May 1st			May 1st to Nov. 15th			
Untested	$1.00	$ 5.50	$10.00	$ .75	$4 00	$ 7.50	$60.00
Tested	1.25	6.50	12.00	1.00	5.50	10.00	
Select tested	2.00	10.00	18.00	1.50	8.00	15.00	
Breeders	5.00 to $10.00 each, any time.						

For nuclei and pound packages, see March issue of this Journal, or write for circular.

H. D. MURRY, MATHIS, TEXAS

Queens and Bees from the Cotton Belt Apiaries

Three-banded Italians only. We are now booking orders for April, May, and June deliveries at the following prices, viz:

PRICES FOR ONE OR MORE

	1	6	12
Untested	$ .75	$4.00	$ 7.50
Tested	1.00	5.70	10.75
Breeders	3.00 to $10.00 each.		
Virgins	3 for $1.00.		

	1	10
1-pound package, wire cage, without queen	$1.50	$1.25
2-pound package, wire cage, without queen	2.25	2.00

1-frame nuclei without queen, $1.50; 2-frame nuclei without queen, $2.75; 3-frame nuclei without queen, $3.50.

When queens are wanted with nuclei or packages add queens at prices quoted above. Write for discount on larger quantities booked early.

We guarantee safe delivery of bees and queens, and reasonable satisfaction. Twenty years experience. No disease. Health certificate with every shipment. Write for testimonials and references if desired.

To avoid disappointment in the spring be sure and place your order NOW.

The COTTON BELT APIARIES, Box 83, Roxton, Tex-

EASTERN BEEKEEPERS

This is the time of year you should get your supplies and put them together. You not only have them ready when needed, but you also get the discount.

Our catalog of everything a beekeeper uses will be mailed free upon request. Let us quote you. One pound round flint glass honey jars $5.00 a gross.

I. J. STRINGHAM

105 Park Place, N. Y.

APIARIES: Glen Cove, L. I.

ITALIAN QUEENS AND BEES

I am better able to supply the trade with my Three-band Italian Queens, Colonies and Nuclei than ever before. Send for circular and prices.

E. A. Leffingwell, Allen, Michigan

THE QUEEN OF ALL QUEENS

Is the Texas Queen, Italian Goldens that will please you in every way. 75 cents each, $8.00 per dozen. Circulars free.

GRANT ANDERSON

Rio Hondo, Texas

THE GUARANTEE THAT MADE "falcon" Bee Supplies Possible

The "falcon" GUARANTEE. Every hive, every super, every crate of sections, every pound foundation every article, and every queen leaving the "falcon" plant goes out with our "absolute satisfaction or money back" guarantee. For more than a third of a century we have stood behind everything we sell. If anything is wrong or not just what you thought it would be, we'll appreciate it if you write us, and we'll make it absolutely right at our expense. Our satisfied customers are to be found everywhere and are our best advertisement. "Once a customer, always a customer," is synonymous with the name "falcon"

The beekeepers' past experience when "short" should have taught him that it's a "wise move" to get hives, sections and supplies ready in the next two months. We will be glad to quote on "falcon" supplies if you will send us an approximate list of what you will require for the coming season.

Red Catalog, Postpaid **Dealers Everywhere** **"Simplified Beekeeping," Postpaid**

W. T. FALCONER MFG. CO., Falconer, New York

Where the good bee-hives come from

HEADQUARTERS FOR BEE SUPPLIES
ROOT'S GOODS AT FACTORY PRICES
FOR
OHIO KENTUCKY TENNESSEE

We carry a large and complete stock of bee supplies, and are prepared to give you prompt service. We have just received several carloads of new fresh supplies. Send for our catalog.

C. H. W. WEBER & COMPANY, 2146 Central Ave., Cincinnati, Ohio

WATCH THIS SPACE
FOR
JOHN M. DAVIS
1917 Queen Prices
SPRING HILL, TENN.

Three-Banded and Golden Italians

The secret of success in beekeeping is to keep your colonies strong. To do this you must have good healthylaying queens Untested, 75c; 6, $4.25; 12, $8.00. Select untested, $1.00; 6, $5.00; doz., $9.00. Tested, $1.50; 6, $8.00; doz., $15. Select tested, $2.00. Safe delivery guaranteed.

E. A. SIMMONS, GREENVILLE, ALA.

BEEKEEPERS' SUPPLIES

Send for new 1917 price list, now ready. Give us a chance to bid on your wants. We can save you money. We are in the market at all times for extracted honey in any quantity.

THE M. C. SILSBEE CO.,
Haskinville, New York
Post-office, Cohocton, Rt. 3, N. Y.

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OF
Lewis Beeware

No Product Can Be Better Than the Sum Total of the Skill, Brains, Conscience of the Men Behind It—This Gives the Product Personality

What is the Personality of Lewis Beeware and the Company Behind It?

The G. B. Lewis Company has been in the business of manufacturing Bee Supplies for forty-three years. It has grown from a carpenter shop to a plant covering nearly six acres of ground, with an annual output of thirty million Sections and one hundred thousand Hives. During all these years in the face of advancing prices on material and labor, the scarcity of suitable lumber, the competition of cheaper and inferior goods it has had many opportunities and inducements to cheapen its product at the expense of quality—but it has ever steadfastly maintained one standard of quality and workmanship. LEWIS BEEWARE IS THE SAME TODAY, WAS THE SAME YESTERDAY, AND WILL BE THE SAME TOMORROW.

The business has been under the management and the lumber has been bought by one buyer for twenty years. He is still managing the business and buying the lumber. The head mechanic came into the factory when a boy. He has been supervising for forty years. The beehive superintendent has been making beehives for thirty-three years. The section boss has been watching Lewis Section machinery and output for thirty-two years.

This Is the Personality that Goes to Make Up Lewis Beeware —Does It Mean Anything to You?

If you believe that "a bee hive is a bee hive" and are not particular about quality or workmanship, then any make of bee supplies will suit you; BUT—if nothing short of the best will do you, then you want

LEWIS BEEWARE

Buy your metal goods and appliances where you like, But "if it's made of wood" insist on LEWIS BEEWARE—Every package of LEWIS Hives and every crate of LEWIS Sections bears the BEEWARE brand. LOOK FOR IT—INSIST ON IT.

G. B. Lewis Company

Sole Manufacturers

BEWARE
WHERE YOU BUY YOUR
BEEWARE
WATERTOWN WIS. U S A
MAKES THE FINEST.

Watertown, Wisconsin

Vol. LVII.—No. 4 HAMILTON, ILL., APRIL, 1917, MONTHLY, $1.00 A YEAR

Honey Plant Regions of North America

—By John H. Lovell

AT the request of Mr. Frank C. Pellett, State Inspector of Apiaries of Iowa, the writer has contributed to his Annual Report an article, in which he has proposed the division of North America into 12 nectar or honey-plant regions. As this report is intended primarily for the beekeepers of Iowa, it is believed that the publication of a brief description of the proposed regions in a bee journal with a wider circulation is desirable. The regions are based on topography, climate, native vegetation and the geographical distribution of honey plants. The study of honey plants can be carried on to much better advantage by the recognitions of these areas than by States. The point of view in the latter case is often too narrow, and fails to offer an explanation of the occurrence of a species, when if the region is considered its distribution becomes perfectly clear. Merely as a matter of convenience for reference it is much easier to refer to a few natural divisions than to a great number of artificial State areas.

The 12 regions, as shown by the accompanying maps, are as follows:

1. Arctic Region.
2. Coniferous Forest Region.
3. St. Lawrence Basin Region.
4. Appalachian or Deciduous-leaved Forest Region.
5. Prairie Region or White Clover Belt.
6. Southern Region or Cotton Belt.
7. Florida Region.
8. Great Plains Region.
9. Arid or Cactus Region.
10. Rocky Mountain Highlands of Alfalfa Region.
11. California Region.
12. Tropical Region.

The maps are essentially the same as those given in the Report, except that in two or three cases the boundary lines have been changed slightly as the result of more definite information, *e. g.*, the southern end of the line dividing the Prairie Region from the Great Plains Region has been carried further westward at the suggestion of Mr. Pellett.

1. ARCTIC REGION.

The Arctic Region extends southward as far as the parallel of 60 degrees, passing south of the extreme southern point of Greenland, Cape Farewell. It is a treeless land, carpeted with mosses and lichens, with a permanently frozen subsoil; and is of no value to beekeepers. In localities there are dwarf alders, birches and willows, a few heath-like shrubs, such as blueberries and Labrador tea, while herbaceous plants are represented by a few hardy grasses, saxifrages, Compositæ, pinks, crucifers and the conspicuous Iceland poppy. For much of the year these barren tundras are swept unchecked by icy winds.

2. CONIFEROUS FOREST REGION.

From Labrador westward to the shores of the Pacific there extends a vast uniform coniferous forest, composed chiefly of white and black spruce, fir, juniper and pine, with which are associated alders, birches and poplars, while willows grow thickly on the banks of streams. In the southern portion small apiaries are maintained by the experiment stations in Manitoba, Saskatchewan, Alberta and British Columbia, but the region as a whole offers little of promise to bee-culture. The principal sources of honey are willows, maples, dandelion, white and alsike clover, fireweed, alfalfa and goldenrod.

3. ST. LAWRENCE BASIN REGION.

This region includes New Brunswick, New England, New York, Michigan, northern Wisconsin and southern Ontario and Quebec, or the territory lying around the Great Lakes and the St. Lawrence river. The conditions in the eastern section are much less favorable to beekeeping than in the western. The early honey flow is largely dependent on the clovers, while in the fall goldenrod is probably more valuable here than elsewhere in the country. Sumac and tobacco are of local importance in Connecticut. In New York there are extensive areas of buckwheat and fruit bloom. In southern Michigan, clover and basswood are the main sources of honey, in the northern part of the State fireweed and raspberry. Basswood was formerly much more valuable than at present.

4. APPALACHIAN OR DECIDUOUS-LEAVED FOREST REGION.

The eastern United States enjoys a uniform and abundant rainfall, which in the highlands of the Appalachian Region supports a magnificent deciduous-leaved forest unequalled elsewhere in North America. In the number of species and the size of the trees it is surpassed only by the forests of the tropics. Within an area of a square mile 75 species have been counted. As would be expected the principal honey plants are trees, as three species of basswood, sourwood, tulip tree, sumac, locust, Judas tree, Magnolia, maples, persimmon honey locust, holly, horsechestnut, willows, besides a great variety of wild and domesticated fruit trees, shrubs and berry plants. The three most important honey plants are sourwood, tulip tree and clover. Sourwood, which extends from Pennsylvania to Georgia, is by many assigned the first position, being widely distributed and yielding nectar most freely. Many beautiful shrubs abound, as Azaleas, Rhododendrons and Kalmias.

5. THE PRAIRIE REGION OR WHITE CLOVER BELT.

The Prairie Region includes eastern Dakota, Minnesota, southern Wisconsin, Iowa, Illinois, Indiana, western Ohio, Missouri (not strictly a prairie State) and northern Kentucky. This is a treeless area, except along the water courses and where it merges into the Appalachian Region. The surface is partly level and partly rolling, and was formerly the bottom of a great inland sea. The soil is rich and deep, fine and compact, and supports a luxuriant growth of grasses. The soil and climate and the absence of extensive forests are most favorable to the growth

of white clover, which throughout this region in favorable seasons yields an enormous surplus; while in the arid regions and highlands it becomes comparatively unimportant. Sweet clover and heartsease are also most valuable in these States, while in the lowlands or river bottoms there are splendid displays of hardy Compositæ, as Spanish-needles, sunflowers, asters, goldenrods, crownbeard, Rudbeckia and Grindelia.

6. SOUTHERN REGION OR COTTON BELT.

In this vast region (see maps) there grow annually millions of acres of cotton, offering a bee-pasturage which in extent and richness can be equalled by few other economic plants. The honey flow lasts from July until long after the first frosts. The secretion of nectar is influenced by soil, climate, rainfall, etc., but is most abundant in rich alluvial valleys, where 100 pounds per colony is obtained in good seasons. Southeastern Texas contains thousands of acres of fruit trees, cotton, horsemint, broomweed and basswood. On the lower coast rattan vine yields a dark honey unfit for table use. In Louisiana there are tupelo, horsemint, goldenrods and asters; in Alabama titi, gallberry; in Georgia tulip tree, tupelo, titi, saw palmetto, asters and goldenrods, while hundreds of acres of the coastal plain are covered by the dense thickets of gallberry.

7. FLORIDA REGION.

Florida might very properly be united with the Southern Region, but the great southern extension of the peninsula carrying it into the Tropical Region and its many miles of coast have produced so peculiar a honey flora that it deserves to be recognized as a separate region. The most important sources of honey are trees, tupelo, orange, palmetto and black mangrove yielding the best products. Black mangrove and manchineel are tropical trees growing on the southern coast, and the cabbage palmetto and citrus areas are also confined to the southern half of the State. Tupelo is abundant in the Appalachicola river. Other honey plants are wild pennyroyal, titi, partridge pea, and Andromeda. There are thousands of acres of savannas in Florida, tangled jungles of grasses and weeds, mostly Compositæ displaying great sheets of golden yellow flowers sufficient to keep thousands of colonies of bees busy.

8. GREAT PLAINS REGION.

While a part of this region is highly productive, much of it is semi-arid and covered with sage brush. There are few trees except along the streams and in fertile valleys, and there are great extremes of heat and cold. The northern portion is not well adapted to bee-culture, and in 1910 only 79 farms in Northern Dakota reported bees. Heartsease is the source of great quantities of honey in Nebraska, in which State 157 honey plants have been listed, but no attempt has been made to distinguish between those which are valuable and those which are of minor importance. Alfalfa is of little value except along the rivers. In Oklahoma the principal honey plants are sweet clover, sumac, heartsease, raspberry, locust and alfalfa. The Rocky Mountain honey plant is also much prized in sections of this region.

9. THE ARID OR CACTUS REGION.

Western Texas, northern Mexico, New Mexico, Arizona, lower Nevada and Lower California are largely a desert or semi-arid region with a very scanty rainfall. Northern Texas is a sandy plain destitute of trees and streams. With an annual rainfall of from three to five inches, extreme aridity prevails over much of Arizona, and in this State and the province of Chihuahua, in northern Mexico, there are over 150,000 square miles of desert land. A great variety of Cacti, an exclusively American genus, in every form and shape, ranging from the size of the finger to tall candelabra 30 feet high grow over or completely cover portions of this region. The prickly pear (*Opuntia Engelmanii*) yields a surplus of light yellow honey. Other plants are Yucca, Agave, mesquite and creosote bush. The mesquite, often the only tree found in these desert regions, extends from Trinity river, Tex., to the San Bernardino Mountains and northward to Colorado. In New Mexico, immense tracts of land are covered with Yucca, and many species of Agave occur in Mexico.

10. ROCKY MOUNTAIN HIGHLANDS OR ALFALFA REGION.

The larger part of these highlands is arid or semid-arid, and agriculture is universally dependent on irrigation. The flora is sparse and vast expanses are covered with sage brush. Throughout this region alfalfa is grown very extensively, and is easily of first importance as a honey plant. The factors controlling nectar secretion are not fully understood, but it is well established that in a semi-arid region calm hot weather following irrigation will ensure a good flow. In Colorado there is truly a lavish display of flowers and

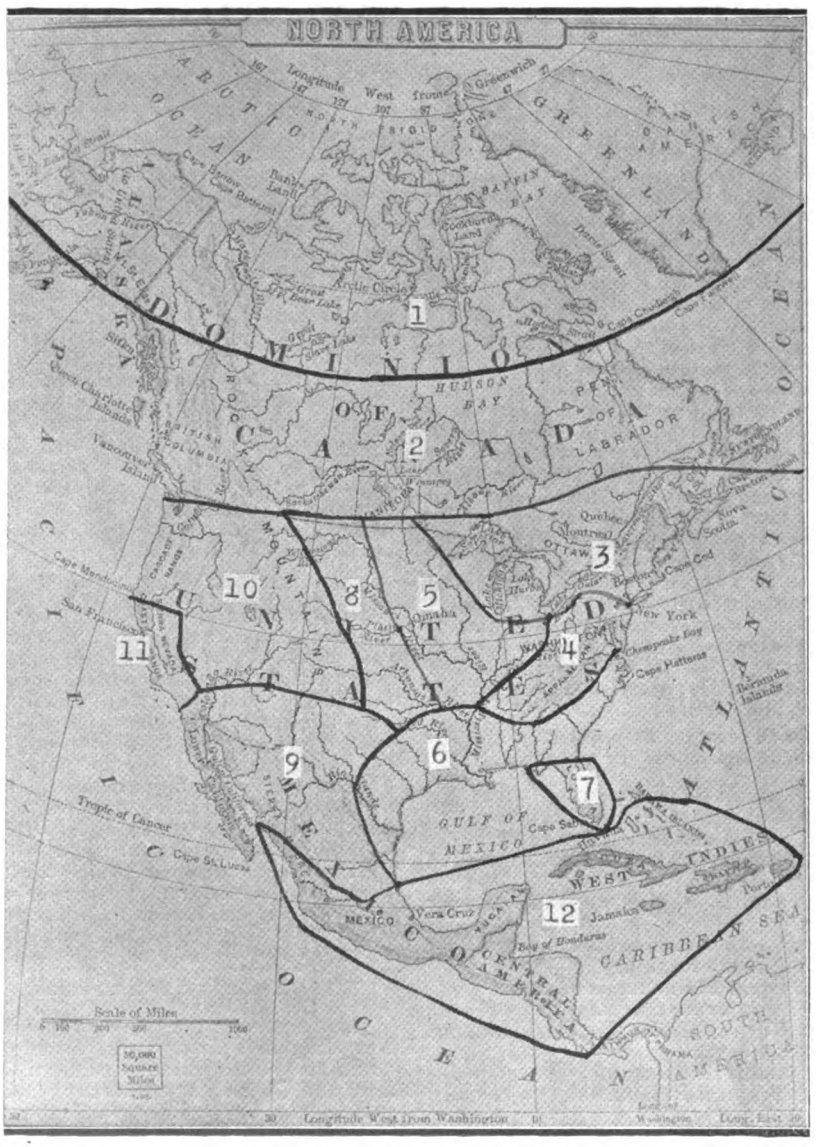

FIG. 1.—THE HONEY PLANT REGIONS OF NORTH AMERICA
1. Arctic Region. 2. Coniferous Forest Region. 3. St. Lawrence Basin Region. 4. Appalachian or Deciduous-leaved Forest Region. 5. Prairie Region or White Clover Belt. 6. Southern Region or Cotton Belt. 7. Florida Belt. 8. Great Plains Region. 9. Arid or Cactus Region. 10. Rocky Mountain Highlands or Alfalfa Region. 11. California Region. 12. Tropical Region

many of the Compositæ are doubtless helpful honey plants. In Washington and Oregon there is a greater rainfall, and the mountains are covered with a magnificent coniferous forest, and there is a great variety of shrubs and herbaceous plants, which are sources of honey. Along the coast of Oregon vine maple and a fireweed are valuable.

11. CALIFORNIA REGION.

No other State within an equal area contains so many species of plants as California. On the Coast Mountains are the famous redwoods. In the beautiful valley of California the meadows and foothills are carpeted with hundreds of beautiful flowers, lilies, buttercups, lupines, poppies, Godetias, and endless Compositæ. To the eastward of this valley the Sierra Nevada rises to the height of 15,000 feet, bearing on its slopes the finest coniferous forests in the world, composed of giant Sequoias, pines, firs and hemlocks. The rich honey flora of California supports more than 200,000 colonies of bees. There are some 50 species which yield a surplus in an average season, foremost among which are the sages and alfalfa. Over 40 of these are herbs and shrubs and the balance trees. Fifty more species, at least, are important to bee-culture, while many foreign plants have been introduced, like the Eucalyptus, which may prove very helpful in the future.

12. TROPICAL REGION.

For convenience southern Florida has been included in the Florida Region, but black mangrove, manchineel and mahogany are tropical trees, and so are the cultivated cocoanut palm, the mango, and custard apple. Among the honey plants of Cuba are the campanillas (*Ipomoea*), mango, citrus fruits, royal palm and coffee tree. In Porto Rico there are logwood, mangrove, mango, guava and guama. Guama (*Inga laurina*) is considered the best honey plant; it blooms several times a year and the bees are never able to gather all the nectar. The tropical forests of the mainland contain more than 100 kinds of trees, many of which are doubtless nectariferous. Logwood fringes all the lagoons and much of the seaboard of Yucatan. Only a glance can be given the tropical flora, which is evidently rich in nectariferous trees.

In the present paper only a brief outline of the honey plant or nectar regions of North America has been attempted. In many instances very little information is available in regard to the honey flora of extensive areas. There are scores of questions which can be answered at once in regard to honey plants by the comparison of the soils, climates and floras of these different regions. There is no difficulty in understanding why white clover reaches its maximum development in the Prairie Region, or why trees are the chief sources of nectar in the Appalachian Region, or why the tropical mangrove and manchineel are confined to southern Florida, or why mesquite, the cacti and other xerophytes are found only in arid areas. It is believed that the different regions are natural divisions, and that this arrangement will prove an incentive to the further study of the North American Honey Flora.

Waldoboro, Maine.

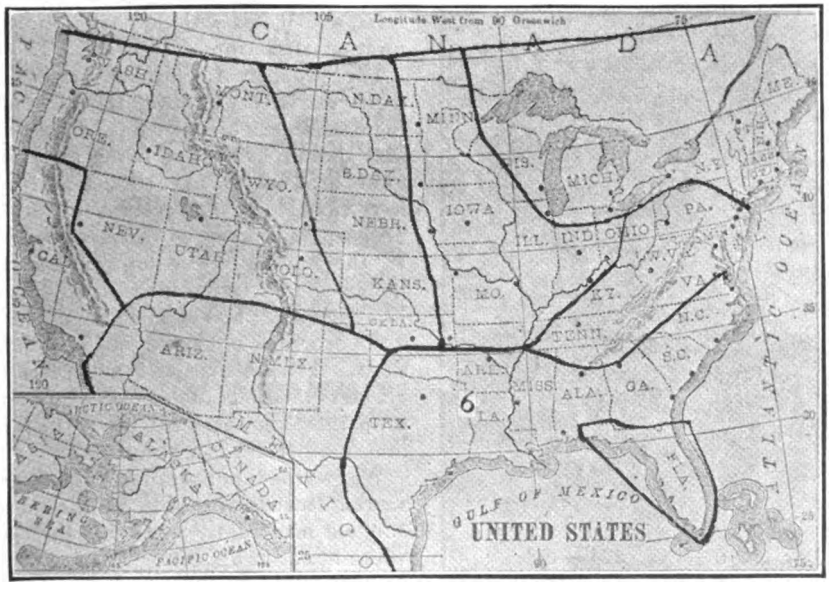

FIG. 2.—HONEY PLANT REGIONS OF THE UNITED STATES
St. Lawrence Basin Region. Appalachian or Deciduous-leaved Forest Region. Prairie Region or White Clover Belt. Southern Region or Cotton Belt. Florida Region. Great Plains Region. Arid or Cactus Region. Rocky Mountain Highlands or Alfalfa Region California Region.

Inspection Work in Illinois

BY C. F. BENDER.

I HAVE read with interest Mr. Frank C. Pellett's article in the last issue of the American Bee Journal. Being one of the inspectors in this State, and having studied the same problems from every angle, I feel like saying a few words in reply.

With much of his article I entirely agree. It is true that our appropriations are too small, that there is some difficulty in getting good men for the work, that some bee owners will resist inspection or fail to carry out instructions. It is true that the pay is too little, and therefore that a first-class man cannot afford to give his whole time to the work. On the other hand, I have some fault to find with Mr. Pellett's conclusions, and with his proposed remedy. He suggests the holding of apiary demonstrations, where the beemen can be taught *en masse*. The only fault with that plan is that the very men who most need instruction will not attend.

We have no difficulty with the intelligent and progressive beekeepers who will attend conventions and field meetings. In fact, these are the very ones who insisted on this inspection work at the beginning, and who furnish the power that keeps it going. The men who harbor and spread disease are most often farmers, or men too old to work, who keep a few colonies, who know nothing about diseases of bees. When a colony dies they set out the combs for the other bees to clean up, or leave the hives open and exposed which is nearly as bad. Such people do not attend meetings to be instructed in bee-culture. They have kept bees from boyhood, and are sure that they know all about it.

No doubt Mr. Pellett, being a good public speaker, finds it more to his taste to address an audience, who come to him voluntarily. He can perhaps do more good in that way. Myself, not being a good public speaker, but having especial talents for private instruction, get much better results from visiting the delinquents, giving the instruction that each one needs, and showing him how to adapt it to his own circumstances. I have induced several troublesome parties to give up trying to keep bees, giving or selling the remains of their stock to some neighbor who was capable of treating them. In such cases I never appear as the officer of the law, but as the impartial friend of both parties. As Mr. Pellett says, much diplomacy is needed. Often a very stubborn man may be conquered by an apparent surrender; he will give generously to the very thing that he has refused on a show of force. It is necessary to judge the man.

There are a few people who wish to injure their neighbors, who will knowingly keep diseased bees for that very purpose. Such people are always cowards, and take their mean revenge only because they have not the courage for open warefare. In such cases the police power is necessary for the inspector. I have found only two such cases, and both gave in when I read over the law to them, showed them that resistance to the State was useless, and would merely cost them a fine, and possibly the destruction of their bees also. An inspector without power to enforce the law, it seems to me, would be much like a policeman who had no power to make arrest, who could only advise people to be quiet and keep the peace.

In regard to Mr. Pellett's plan of a straight salary for the inspector, my objection is unless another man is employed to inspect the inspector, the salary will be paid, whether the work is done or not. The office of bee inspector will inevitably drift into the class of political jobs, which pay a salary, but require no work, known from of old as sinecures.

Newman, Ill.

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Frank C. Pellett, Staff Correspondent.

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THE EDITOR'S VIEWPOINT

The Goldenrod as a Honey Producer

We have often made the remark that the goldenrod yields no honey in this part of Illinois. Many people of other regions have said the same thing. We thought it was a matter of climate, but it is so indirectly only. It is a matter of variety. At the Toronto meeting, a large number of varieties of goldenrod were shown, and I recognized our variety *Solidago canadensis*. The report was made that this variety does not yield honey in Ontario either.

I thought it might be well to give a list of the different varieties of this plant. But when I referred to the last edition of "Gray's Botany" I found in it the description of 57 different *Solidagos*. It makes me wonder whether I have really recognized our local as *Canadensis*.

Wide Spacing of Frames

The reader will remember that in our December number the Editor called attention to remarks made by Allan Latham, of Connecticut, on the spacing of frames 1⅜ inches compared to the 1⅛ spacing used by a few apiarists.

Concerning this question of frame spacing, P. C. Chadwick has the following to say in Gleanings, page 125:

"If short of combs in the extracting season, go to the brood-chamber and remove a frame from each 10-frame colony. By the time the brood hatches from them they would be of little value as brood-combs unless the flow were exceptionally long. Moreover, 9 frames in a 10-frame body will often produce more brood than 10 frames; for unless they are perfectly straight and evenly spaced there is often a crowded comb that will not be used for brood anyway. Self-spacing frames are an exception; but the majority of frames in this State are not self-spacing. When the flow is on, combs are a great asset and add materially to the honey crop if they are needed badly."

A 10-frame hive the combs of which are spaced 1⅜ inches would be 13¾ inches wide inside. Using only 9 frames would give each frame 1½ inches of space with a ¼-inch space to spare. So a regular factory-made 10-frame hive may be used for 9 frames and secure the wide spacing. But if this wide spacing is beneficial, why not make our hives a trifle wider and still have 10 frames in them?

Mr. Chadwick is a beekeeper of experience and his statement is valuable.

Beekeeping in Carniola

Mr. Frank Rojina, in his interesting article on bee-culture in Carniola, calls our attention to a fact that is too much shadowed by the fame of Dzierzon. Mr. Langstroth, himself, reported the fact that Jansa discovered that young queens leave their hives in search of drones, long before Huber's investigations. This is mentioned on page 57 of our "Revised Langstroth."

FRANK ROJINA.
Who is a son of the Editor of the Carniolan Bee Journal, is in America working as assistant to Prof. Jager at Minnesota.

So we gladly insert and repeat the statement which he makes that Anton Jansa is called the first great beekeeper and Dzierzon only the second by those who have been acquainted with the facts. This does not detract from the fame of Dzierzon, for his discoveries were original, and it was through him that the facts became well known to the mass of beekeepers. How few there are who can really lay claim to an original discovery may be realized from this occurrence.

Honey Prices

The beekeepers are themselves responsible for the low prices that prevail so frequently. If they could be persuaded to hold for reasonable prices instead of selling at the first offer it would be an easy matter to get a living price. Too many sell at retail for wholesale prices. One of the large bottling concerns recently offered 10½ cents per pound for a carload of white clover extracted honey and failed to get it at that. As long as beekeepers will peddle their honey around the country at from 8 to 10 cents per pound in five-pound lots there is little hope that the big buyers will pay a decent price.

The man who retails his honey at 10 cents per pound as some even boast of doing, has no argument to offer when a bottling concern offers 7 cents in a wholesale way. A buyer could not buy a carload of honey at 7 cents, pay for bottles, labels, packing, etc., and sell at retail at 10 cents without losing money on the transaction.

The prospect for higher prices for next year is very good indeed if only the beekeepers can be made to see that they should demand a living price for their product. They should at least have sufficient consideration for other beekeepers to keep up the retail prices. In the middle West not a pound of honey should be retailed at less than 12½ cents per pound in 10-pound lots, or 15 cents per pound in smaller quantities. If the beekeepers will exercise business methods in disposing of their crop, there is every reason to believe that good prices can be obtained.

We warned our readers not to get scared because of the big crop last season, but many did. Some sold the best white honey at 5½ cents, when if they had taken our advice and held on they would have sold it for 9 or 10 cents in large quantities. If we don't get a living price let us put the blame where it belongs—on ourselves.

L'Apicoltore's Fiftieth Year

The above mentioned publication is now entering the 50th year of its life. It is the official organ of the Italian Central Association of Beekeepers, and has been sent to us as honorary members of this association since its third year, 1870, a period of 47 years. It is one of the most progressive bee magazines in the entire world. Its January number contains translations from Gleanings, from Dr. Phillips' book, "Beekeeping," from the American Bee Journal, from the British Bee Journal, with quotations from some of our leading writers, such as Dr. Miller, W. D. Wright and others.

The January editorial of this magazine mentions the names of a few leaders who have helped to organize Italian beekeeping but who have disappeared: The microscopist Gaetano Barbo; B. Crivelli; Dr. Dubini, author of L'Ape (The Bee); C. Fumagalli; Chas. Dadant; Dr. Metelli; A. Cadolini; Profs. Barbieri, Clerici and Mona, the last named a noted exporter of Italian bees; and lastly Rauschenfels, late editor of L'Apicoltore. Count Visconti, who is still living, is another of the early workers. But the future is to the young men, under the direction of V. Asprea, the present editor. Our good wishes go to the generation who will continue the work of the elders. There is always room for progress and Italian bee-culture will hold its rank. The Italian bees have a reputation throughout the world, and the Italian apiarists will remember that "Noblesse oblige."

Two other magazines, "L'Apicoltura Italiana" and "L'Apicoltore Moderno," are helping the good work.

Queen-Rearing in Italy

We have before us a "Manuale di allevamento delle api regine" (Manual of Queen Rearing) by Vincenzo Asprea, the able editor of L'Apicoltore. It is a small book of 243 pages, gotten up in the neatly artistic manner customary in artistic Italy.

This work is a resumé of the different methods in vogue for the rearing of prolific queens of best honey-producing qualities and should be commended to the Italian apiarist, for whom it is fully as important as such work would be in any country, since the entire world looks to Italy for high grade bees.

The Doolittle method, the Alley method, the Pratt (Swarthmore) method are all explained, with quotations from Sladen, Giraud and other experimenters who have suggested improvements.

Thus far only a few Italian breeders have followed modern methods in queen-rearing, but they are leaders. The book mentions our well-known friends, Penna, G. Piana and Piana Brothers, as well as Messrs. Malan and Bozzalla. But it is to be hoped that the study of as thorough a treatise will induce many other Italians to adopt the latest modern methods.

Our kind friend, Dr. Triaca, has our thanks for sending this excellent treatise to us.

Seventy Years of Beekeeping

The 4th installment of "Seventy Years of Beekeeping" will not appear until May, owing to lack of space. There will be at least two more numbers of it.

Preserve the Bee Magazines

A few days ago I was astounded and highly pleased to receive a letter from our good Italian friend, D. Barone, now at Medina, Ohio, asking me for the loan of the past five years of the Italian bee magazine, "L'Apicoltore." Luckily I had those five years, not a number missing, in spite of the submarines. I have 46 years of this magazine in my library. I was about to send the entire lot to the bookbinder when this request came. They will be bound by and by and placed side by side with the entire files of the Revue Internationale d'Apiculture, Gleanings, and our own American Bee Journal. We have also all of L'Apiculteur, The Review, and a score of other lesser lights. Keep your bee magazines. In years to come it will be a delight to peruse them again.

Michigan Life Members

On page 11 of our January number, mention was made of the election of C. P. Dadant as a life member of the Michigan Association in company with A. I. Root and Dr. C. C. Miller. This information was imparted to us by E. D. Townsend, who had modestly neglected to say that he was also elected a life member at the same time and for the same reasons, "Services rendered to beekeeping." We now correct the apparent omission of his name in the list, and since

"On their own merits modest men are dumb,"

we take this opportunity of saying that Friend Townsend is publishing an excellent magazine, the "Domestic Beekeeper," which is taking the place of the "Beekeepers' Review," and bids fair to become as valuable as the Review was in its best days. We feel proud of his company on the list of life members of the oldest State Association of beekeepers in the United States.

Obituary—David Clayton Polhemus was born Dec. 7, 1861, at Silverton, N. J., and died Feb. 13, 1917, at Lamar, Colo., aged 55 years, 2 months and 6 days.

He and his brother Charlie went to Nebraska in the spring of 1883, and in the years following his brother John and wife also went to Nebraska, and the three brothers were among the early settlers of Harlan county.

On April 17, 1889, Mr. Polhemus was united in marriage to Christina Peterson, and to this union were born three children, Clayton David, Edgar Charles and Millie. In the spring of 1895, the family moved to Las Animas, Colo., and in a short time baby Millie died. In May, 1900, the family moved to Lamar, and in April, 1902, the mother was called to her heavenly home.

In August, 1904, Mr. Polhemus was married to Cora Douglas, of Topeka, Kan. Since this time Lamar has been his home.

Mr. Polhemus had but returned from the meeting of the National Beekeepers' Association, being elected vice-president of the organization and also president of the Industrial Section. At the time of his death, he was president of the local school board; his activities along educational lines have always been the admiration of his fellow citizens. He is survived by his wife and and one son.

Don't Neglect the Bees

In all our Northern and Middle States, April is the month for examining colonies, making sure that they have laying queens, enough honey and pollen and sufficient poplulation to carry them to fruit bloom.

Be sure and examine all dead colonies, closing up the hives after having removed the dead bees. If there is any disease of the brood in your vicinity, be sure and examine the combs of all that have died. Where there is any dead brood a very careful diagnosis should be made. If there is a ropy foulbrood or any doubt concerning dead brood, send samples of it to Dr. E. F. Phillips of Washington, D. C., for determination of the exact condition.

Missouri Foulbrood.—Dr. L. Haseman, State Entomologist at Columbia, Mo., would like to correspond with beekeepers who may have foulbrood among their bees, in view of treating them and also of making experiments upon the disease. He will gladly extend his help to any Missouri apiarist who will write him if in need of instructions.

No. 5.—Among Eastern Beekeepers

BY THE EDITOR.

ON Aug. 23, I again started from Albany with Dr. Gates, although the field meets were all over. This time we were bent on visiting leading beekeepers around Syracuse.

Starting at 9:00 a.m., we traveled the entire distance, 150 miles, before 6:00 p.m. Fine roads, no dust, no mud.

Coming to the outskirts of a city, about midway, we noticed two policemen who signaled for us to stop. We looked at each other, wondering which one of us had committed a crime. As we neared the agents, they glanced at the occupants of the car and at once signaled for us to go on, as if we were not the parties they were looking for. So our curiosity was aroused and we asked what was the matter. "Infantile paralysis," was the reply. At that time this dread disease was raging in the large cities, and they were on the lookout for children coming from infected spots. Farther on we noticed the same solicitude, also warning signs, and when I left Syracuse three days later, half a dozen hospital nurses labeled "Inspectors of Health," were awaiting the arriving train to examine all suspects. It is by such methods that this terrible scourge has been restricted so as to cause comparatively little damage. It is by somewhat similar action that the bee diseases may be lessened and overcome. The few beekeepers who object to apiary inspection should understand that such inspection, if managed by practical and well informed officials, is not only advisable but indispensable in these days of active traffic in both bees and honey.

Syracuse, located in the center of a fertile valley, has successful beekeepers in all directions. We could not hope to visit them all in three days, and this was the limit of my time. We began with Doolittle and Clark, about 30 miles away.

Our old acquaintance and contributor does not need any introduction. He is five years my senior, and like A. I. Root, L. C. Root, and myself has taken a back seat in the work of the apiary. In his case it was unavoidable, for he has been for years giving his entire time to an invalid wife. This must strike a sympathetic chord in the heart of his brother beekeepers. He is fulfilling a duty.

P. G. Clark, Doolittle's partner, helped by Mrs. Clark, has the care of some 175 colonies of bees and 250 nuclei for queen-rearing. They live within calling distance from the Doolittle home.

In the nuclei, the frames run crosswise instead of lengthwise; that is to say parallel to the entrance, so that the current of air is excluded from all but the front comb. This is what the Europeans call the "warm comb system."

The queens are reared by the Doolittle method, of course. We examined a few that were beautiful. I remarked that I did not care for the looks of a queen if she was prolific and her bees pure and good honey producers. Doolittle replied, with a chuckle, "You like to look at a pretty girl, why not at a pretty queen?" That is true, and pretty queens are not to be despised. Mr. Clark showed me a shipping-cage of his own contriving, arranged for shipment to foreign countries. It seems to be the prevalent opinion that queens are often stifled to death in the mail sacks. His cages are square and have openings for air on all four sides and the top and bottom, which lessens the chances of suffocation.

He has a simple way of preserving combs. We all know that moths rarely lay eggs in a comb which is exposed in the open air. So he has racks under the projecting eaves of his honey house and the combs are hung there winter and summer. A few were there, when we came, and I examined them. They were perfectly free of moths though they had been there since the previous fall. The outside ones looked rather weather-beaten, but sound.

For the benefit of those of our readers who think it is unworthy of a beeman to wear a veil, let me say that although their bees are very peaceable, Doolittle wears a veil all the time in the apiary. His veil is fastened to the rim of a straw hat and is held at the bottom by weights at its four corners. In this case the weights were iron nuts of ¼-inch size, a very simple fastening.

The crop was good and we saw a fine lot of clover honey. There as elsewhere it was white and alsike clover. Buckwheat is plentiful in the fall.

I learned there that bee eggs could be safely shipped quite a distance without hatching if kept on ice. They shipped eggs in this way to Dr. Gates, and he reported that they had arrived safely and hatched well, after four to six days.

We were entertained with great hospitality by Mrs. Clark. Before leaving we visited the Doolittle sugar-bush, a grove of fine hard maples interspersed with basswoods, only a few rods from

ALONG THE MOHAWK VALLEY

MR. DOOLITTLE DISCUSSING BEEKEEPING WITH MR. AND MRS. P. G. CLARK

the apiary. Maple sugar and honey make a good combination for a beekeeper to sell.

S. D. House, of Camillus, was the next man on our program. Mr. House is a very extensive beekeeper, who believes in the sectional hive and a small brood-chamber. He appears to do very well with both, as we saw tons and tons of honey. But what a lot of swarming! He told us of having had 18 swarms come out at one time, if I am not mistaken. His success with bees is an evidence that it is not so much the implements as the beekeeper's system which makes for success.

Mr. House places his yards four or five miles apart. That indicates how far he believes bees will go for honey. But he gave me a new idea on this point. He believes that bees go farther for strongly smelling blossoms, because these can naturally be scented farther away, of course. This reasoning is so obviously and plainly correct that I do not understand why we did not think of it ourselves. That is why, in buckwheat sections, the bees are claimed to travel farther than in many other sections, where the honey is less odorous.

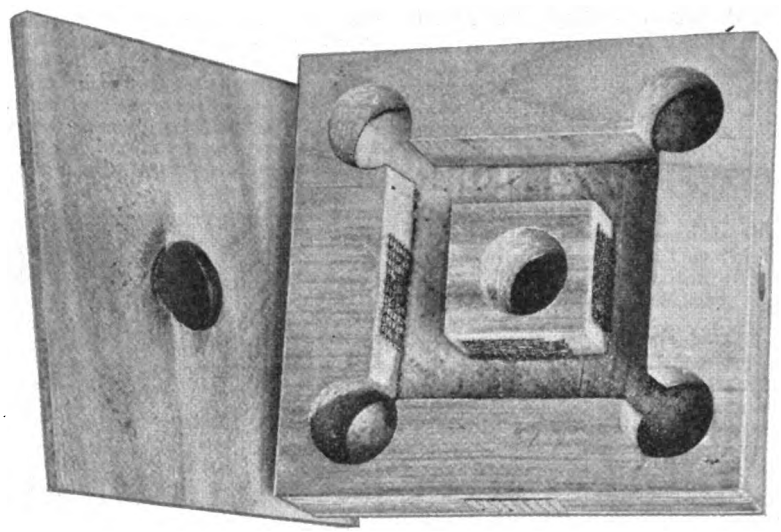
They had an epidemic on adult bees during the spring of 1916, from June 20 to 25, which resembled the Isle of Wight disease, the bees dying in hundreds in front of the hives, without apparent cause. It was during a period of excessive moisture and the affected bees were three weeks old or older. Some colonies were very much weakened by it. The reader will remember that a similar trouble was reported from Amherst at about the same date in similar weather conditions.

Mr. House supersedes his queens every year and holds this operation is worth easily $2.00 per colony. He wants late reared queens, so their fertility may be at its highest in the spring. But this is evidently not sufficient to hinder natural swarming.

Our next visit was to Mr. Irving Kenyon, with whom we remained but an hour or two. Mr. Kenyon's honey crops have been subject to a peculiar trouble during the past two years. Some of it ferments in the cells, after it is capped over, and often bursts the capping. The trouble has existed in his product for several years, but has been on the increase lately. He wonders whether it is due to a microbe within the hives, perpetuating itself from year to year, or whether it is due to the location. I thought that it might be due to some special bloom. Can any of our readers suggest a possible explanation? The trouble has been so annoying that our friend thought of resorting to the extreme remedy of transferring all his bees upon sheets of foundation in the spring and rendering all the old combs into wax.

On the morning of another fine day, we visited Mr. Oscar Dines, at his apiary, on a hillside of the Onondaga Indian Reservation. And let me say at once, for the benefit of our foreign readers, that although several hundred Indians are still living there, they are of a very modern type, their women wearing clothes of the latest fashion when coming to the city. Were it not for their broad smooth faces, beardless in all cases, their smooth coal-black hair, their reddish skin, no one could imagine them to be descendants of the proud, cruel aborigenes, depicted less than a century ago by Fenimore Cooper, and living exclusively on the fruit of the chase.

Mr. Dines lives in town. His apiary of some 300 colonies is on a pretty slope, in a good region, a half mile or so from the end of the interurban line. His crop was immense, his bees beautiful Italians, with gentle disposition. He, like friend House, uses a sectional hive, the frames of which hang freely and are a delight to handle; they are so short and convenient. We opened several hives together and he expressed to me his great enjoyment of beekeeping. He is happy among his bees. When he sent me the accompanying photo of his apiary, he wrote in part:



QUEEN-CAGE BY MR. CLARK
Air is given to the bees from every side

DOOLITTLE & CLARK IN MR. CLARK'S APIARY NEAR BORODINO

"Enclosed you will find a remembrance of the pleasant visit we had at my apiary, which was only too short for what we wanted to say. The honey house is in the back ground; the lady is my daughter, Mrs. Parker; the man standing you recognize. The colony that yielded so much honey is not visible in the picture. My honey is all sold and shipped away and everything cleaned up and put in its place ready for next season."

Mr. Dines is the inventor of a very simple swarm-catching device, to be used however only when you are in the apiary and see a swarm in the act of emerging. It consists of a cage made of two boards for a frame work and four sides of wire mesh, with an opening across one end to fit on the entrance of the hive. This cage is placed in front of the colony that is in the act of swarming, and the bees rush into it, since they cannot do otherwise.

If the queen has been caught with it, it is only necessary to carry this cage to the front of an empty hive and the bees will hive themselves. Two or three of these cages, in very active swarming time, give the apiarist quite a relief, as each of them takes care of a swarm without trouble.

The last man visited was Mr. F. W. Lesser, manager of some 800 colonies, scattered over quite a territory. Riding with him in a "Tin Lizzie," we visited an apiary located in the brush of a hillside. The hives were tiered three and four stories high and promised a big crop. Mr. Lesser complained of the same adult bees trouble of June, as we mentioned in speaking of Mr. House. But he ascribes this trouble to unhealthy pollen. Time and experiments only will give us a clue to this problem. He does not think bees work profitably at a distance of over two miles, and says bees located in the basswood timber will harvest twice as much honey as those two miles away from it.

I have now reached the end of my eastern visit. After a short stop in Chicago, I arrived home at the conclusion of the 32d day, glad to have met so many, but gladder still to be among my people again.

Building Up a Strain of Bees

BY G. M. DOOLITTLE.

"HOW may I build up a strain of bees, and what are the dangers of inbreeding?" is a question on which a writer requests that I give my views through the columns of the American Bee Journal. Those who keep bees, with possibly a few exceptions, keep them for the profit they yield; so I take it for granted that the questioner wishes to build up a strain of bees which will give him the most honey either comb or extracted.

When I started in beekeeping, in 1869, there were no "honey bees" to be had in these parts save the "black bees," and they did not come up to the high standard which I desired. In 1873 I procured an Italian queen, reared queens from her and gave these young queens to about half of my colonies. The next year I kept a careful watch of proceedings, and jotted down in an old diary: "I find the Italians proof against the wax-moth. They do not desert their hives in early spring; and whenever a small amount of honey is obtainable they gain in stores, while the black bees require feeding."

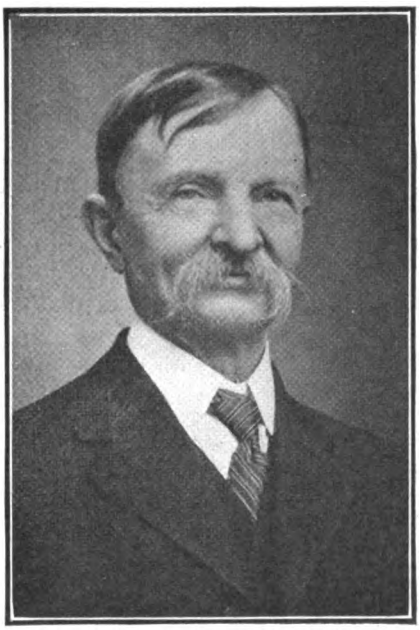
Since then I have tried every variety or strain of bees which has been brought into the United States, but found none, for my locality, which could equal the Italians. Having settled on the Italian bee as the best, I found that *even these bees* were not alike profitable. There are few careful observing beekeepers but have noticed the lack of uniformity of yield between colonies. This may be from two or more reasons or a combination of them.

The colony giving the lesser amount may lack enough bees of the right age for gathering. The difference may be in the bee itself. The thorough understanding of the right management of colonies to secure the best results has much to do with the yearly product in honey, and the very best queens obtainable will never be a success where the management is faulty. A management that has no eye toward the date of blooming of the flowers in the locality will rarely give a satisfactory return for the time and labor expended, even with the best bees the world affords.

But let us look at the bee side. From reports and a long experience in visiting different apiaries, I am led to think that the variation in yields is nearly if not quite 50 percent between the 10 highest colonies and the 10 lowest, where the apiary numbers 100 colonies. That the strain of bees has much to do with this is certain; and when apiarists fully realize the difference in stock, the question of breeding will receive as much attention as is necessary for a successful management.

In my early work in the improvement of stock, my thought was that the queen that would lay the most eggs must certainly be the best. The idea proved to be a mistake. Some queens producing not nearly the number of bees that others did would give much better results in surplus honey. A few years of experience will convince the close observer that it is not the most prolific queens that have the strongest colonies at the beginning of the clover flow, or give the most substantial results for the season. These facts being known, it remains for the apiarists to find out the reason. If we cannot account for one colony collecting one-half more or twice as much as another in the same apiary, we can take the short cut and supersede the queens of the less productive ones with the strain which gave twice as much.

It is hardly necessary to argue why



OSCAR DINES, OF NEW YORK STATE

queens should be scientifically bred. "The survival of the fittest" will not develop a better bee than we have now, for she cares for nothing save the perpetuation of the species. How often have I heard apiarists say, "If each colony reached the high standard sometimes reached by a single colony, my honey crop would double." Careful breeding will do much toward this, and with it reduce in proportion the cost of management and equipment. This means a greater profit.

We have been told by the successful honey producers that the introduction of new "blood" helps much by avoiding the evil effects of inbreeding. This, if we accept the theory, can be brought about by bringing home colonies or queens from outapiaries, by exchanging queens with other successful apiarists, or by an occasional purchase of a good queen.

There are many points to breed for, but the most eagerly sought is, as I said at the outset, greater honey production. But in breeding for profit we often run against traits that are almost a part of the bee itself; and to change which would mean to change the bee. To illustrate: Let us take the swarming impulse or the desire for increase. By persistent breeding we can remove some of the conditions which tend to produce swarming, thereby reducing this tendency to as low a point as possible, but to eradicate it entirely seems out of the question. By rearing our queen-cells in colonies whose desire to supersede their queens is uppermost, quite a gain can be made in this direction. The accounting for the difference in productiveness of different colonies is not always easy to tell.

I incline toward the vitality and longevity of the workers of certain queens as being very desirable, as such have the power of continued endurance. When workers emerging from Aug. 30 to Sept. 10 were found doing good work at gathering nectar the next year on June 20, with a few still holding out on July 4, I was not "slow" in taking the hint. I lost no time in rearing young queens from their mother, so that these young queens could replace all inferior stock. When the mother of this long-lived stock showed a disposition to place the maximum number of bees on the stage of action, at the blooming of the flowers which gave a surplus, without any special management or manipulation on my part; and when they entered the sections with the first nectar, without a desire to swarm, I considered this queen of still more value in building up of a strain which should be superior to what I had before attained.

Whenever such a queen is found she should be kept as a breeder, even should she live to be five years old, as did this queen, rather than have her life "snuffed out" annually, as is strenuously advocated by many, in their desire to have each colony presided over each spring with a queen less than a year old. As the queen is fundamental to the colony, we should "strain every nerve" toward better queens. I doubt the wisdom of advocating the "baby nuclei plan," together with the caging of fresh emerging queens from one to eight days, as has been done to a considerable extent during the immediate past, in order that they may be *cheaply* reared and fertilized through a saving in nuclei.

As to the "dangers of inbreeding," asked about by the questioner, when the fact is remembered that to all practical purposes all drones are the "sons of their mothers," this inbreeding matter is little more than a myth. Inasmuch as a queen that has never mated with a drone can lay eggs which will produce drones having full procreative powers, and the mating of the queen seems to have no essential effect on her drone progeny, the grand-daughters of any queen cannot become more than half sisters unless they mate with drones produced by their grandmother. Therefore, if a certain queen is used to rear queens, and another to rear drones, even did the young queens mate with

the desired drones, no inbreeding would be done that need worry the practical apiarist whose ideal is honey production. Then when we realize that drones, for miles around, congregate in certain places in the air, and that our most carefully reared queens are almost sure to go to these congregating places, any danger, for the practical apiarist, of inbreeding need not even disturb his dreams.

Borodino, N. Y.

A Queen Clipping Story

IT was many years ago, on Easter day, during one of those radiant spring days that one appreciates the more because one has missed them so long. The bells of the churches had already announced the solemnity of the day, and my wife had said to me: "I hope you will not fail to come to church today." I had replied hurriedly: "Yes, yes, certainly." But—how it happened I do not know—when the bells were rung for the third time, I was in the apiary opening a hive of bees.

I had six hives of bees in the remotest rear of my garden, and we had a neighbor whose principle it was never to let anything get lost. So whenever a swarm would settle in his lot, he would run and get a straw skep, hive the swarm without saying a word and take it away. There is nothing so vexing as to lose a swarm in the spring, but when you know it has been taken on the sly, it is still worse.

I had read in a foreign bee journal that one could avoid the loss of swarms by clipping the wings of the queens, and this was what I was aiming to do, on that Sunday. At first everything went well, but when a man has handled a spade or a hoe all the week, it is somewhat difficult to hold a queen. They are so frail that one never knows whether one is holding them right or crushing them. Several times it has happened to me to say, in releasing a queen: "There, I killed her!" As I had noticed in that same journal that one could clip the wing of a queen without seizing her, I decided that I would try that method on the second queen. But when the fingers are stiff to handle a queen, they are just as much so for holding scissors. I was holding the frame in one hand and the scissors in the other, following the queen who was passing from one side of the comb to the other, or hiding under the workers. A clip of the scissors is quickly done, but you must do it properly and not clip a leg or the end of the abdomen with the wing. I believe the man who advised that method is a theorist who has never tried it himself, unless he be a legerdemain performer.

I had been following the queen with my scissors for perhaps five minutes when she reached the top of the comb, and probably becoming convinced that I was after her, she took flight just like a hen that you are trying to catch. It was the first time I had ever seen a queen leave the comb; she passed near my face; I looked up to follow her, but the sun blinded me and she disappeared. I hunted for her for a quarter of an hour on a little tree which was near to me; I investigated one leaf after another uselessly. She was lost.

Was it because of Easter day? I had no sooner closed the hive when I heard a voice saying, "Serves you right, you pagan! You imagine that you can examine your bees, unpunished, on Easter! Serves you right! A queen lost, a crop lost, 40 pounds of honey! At 20 cents that makes $8.00! A well deserved fine, not too much!"

But this made me peevish. "Do you think that I have no right to look at my bees when I feel like it? I'll show you." So I opened the four remaining colonies and clipped the wings of the queens by catching them across the corslet. But the thought, "Serves you right," kept ringing in my ears, in spite of myself. The sun did not seem so bright, and things looked gloomy. I put everything in order and walked towards the house, thinking: "Don't tell any one about this at dinner, for the "Serves you right" would be likely to keep alive until next Easter.

I walked into the house. But when I lifted my hat off, I heard a "frr frr," the beating of wings. Oh my, my queen, my queen, there she was, on my hat!! I caught her, ran to the hive and let her run in. I was in such a hurry that I even forgot to clip her wing. The sun had become radiant again and the day lovely. I was so happy, not so much for my crop returned in perspective, but to be able to answer that voice which said, "Serves you right." It seemed to me that I was entitled to reply: "Ha, not so big a sin after all." But just the same, since that day, I have never opened my hives on Easter.

—Bulletin de la Société Romande.

APIARY OF OSCAR DINES, OF SYRACUSE, N. Y.
The largest number of colonies I have seen in one apiary, nearly 300. Mr. Dines enjoys beek eeping hugely

Moving Bees

BY L. L. ANDREWS.

THE moving of bees has become so common over most parts of the United States that I will give only my personal experience, hoping that it may be of benefit.

If the apiary is to be used with the intention of immediate honey-gathering, large colonies must be used. If the apiary is to be built up to honey-gathering strength after moving, other methods can be used.

To move short distances, say up to 50 or 60 miles, tight hives and good ventilation are the prime requisites. I use a screen made of ordinary window screen on a frame made of ⅞-inch lumber to tack over the hive after the cover is removed. Close the entrance with a strip of burlap soaking wet.

I will go more into detail in my description of moving long distances in order to get the later crop. In Utah the honey flow is looked for about July 15, while here most of our honey is made by July 1. By crowding a little each way, we get most of the crop here and get up there in time to get a crop also.

In preparation, a good way is to figure on about one frame of honey, one dry comb, three of brood and honey, a good supply of young bees, and above all a young queen. Nothing is so provoking as to have a queen break down and the bees try to supersede her in the midst of a honey flow that at best is of only a few weeks duration.

Move all colonies some distance a day before you expect to ship, to screen out all old bees. Place some hives with combs and a frame of brood —about one hive for each 20 colonies moved—on the old location to catch the go-backs.

With the hives to be moved, fix all frames secure. If self-spacing, crowd to one side of the hive and drive a six-penny nail in the end of the hive to hold the frames secure. Place the screen over and tack lath on to hold secure. I close entrances by tacking on pieces of lath, leaving a space between the width of a lath. This space a small piece of lath will fill quickly when the hive is ready to close.

Have plenty of help, and when you expect to ship get everything ready and load quickly. Place hives crosswise of the wagon and lengthwise of the railroad cars. Place the hives about three inches apart in the cars, and many leave an aisle so that you can go the full length of the car to water during hot weather. It is yet a disputed question whether it pays to water during shipment, but we have always done so. We used a squirt gun much like we made out of elder when boys.

The best results are obtained by shipping nothing but sealed brood, as the bees will suck the uncapped brood

dry, when the hives become heated.

In placing the hives in the car, put a row of hives across, then put two parallel pieces of 1x2, or larger, the width of the car on the hives and make them secure. If the car is not packed full, brace strongly in the middle, as no one has any idea how much jamming the car will get endwise. And to have a carload of bees get to moving and break open is some trouble, I assure you.

In shipping by rail it is necessary to have an attendant accompanying the car, as bees go as live stock. After arrival at the destination, haul to your location as soon as convenient. Avoid as much hot sun as possible and release the bees at sundown. Sprinkling just before you open the hives will help to quiet them.

If the hives should happen to be on movable bottoms, it would be a great help, as the bees that have died on the trip will be on the bottom and often clog the entrance. If the journey has been long and the weather hot, you may have trouble about the bees swarming out.

I tried moving some strong colonies to Utah, a distance of about 800 miles, but the results were not satisfactory. Moving short distances requires no great amount of knowledge, but shipping hundreds or thousands of miles calls for skill, and those who have practiced it for years still find some room for improvement.

Corona, Calif.

The Prevention of Swarming

BY THE EDITOR.

THERE are many methods in vogue for the prevention of swarming, but they are nearly all by manipulations which require a great deal of time, at the busiest season. The method which we sustain as best and which I propose to describe requires no active manipulations during the honey-gathering period, outside of the necessary ones and is what might properly be called a "let alone" method.

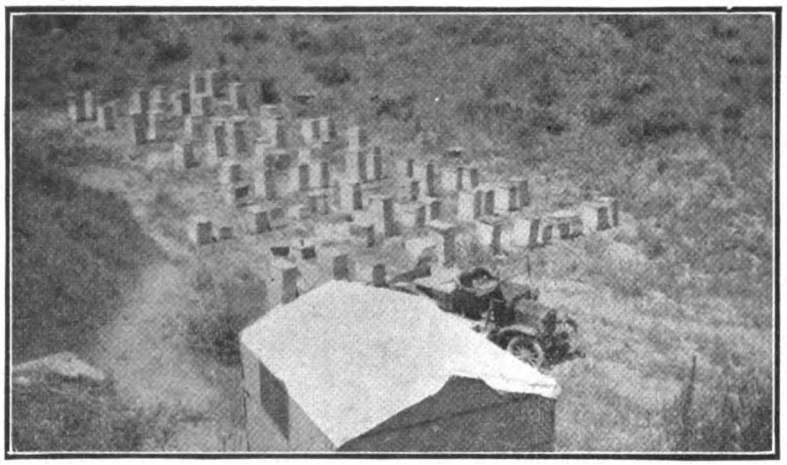
As early as 1870, we found ourselves with a sufficient number of colonies to make swarming undesirable. Besides the objectionable increase, in numbers, swarming caused an increase of labor when we were busiest. The method which we then adopted has been in constant use by us since, with additional improvements. We do not claim that swarming can be prevented altogether, neither do we claim that it is as easy to avoid it in the production of comb honey as in that of extracted honey. But the success of our management during the past season is ample evidence that the principles enunciated below are in the right direction. Out of about 525 colonies, spring count, we gathered less than 30 swarms, but harvested over 200 pounds per colony, while a neighbor of ours, less than two miles from our home apiary, gathered 12 swarms from five colonies, owing to his neglect of proper attendance to their needs. The requirements are as follows:

1. An ample brood-chamber for the needs of a prolific queen. If the queen finds herself confined to a scanty lower story by excluders or otherwise, she will make it known to the bees or they will instinctively notice it themselves and prepare queen-cells.

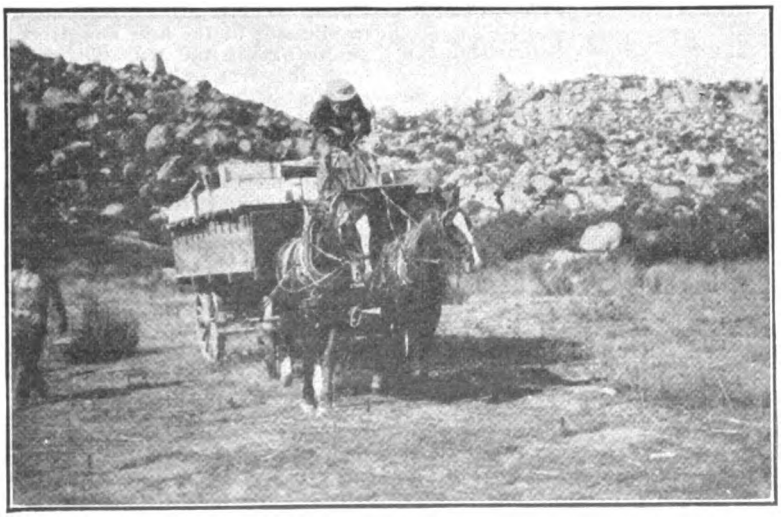
We use a very large hive, large brood-chamber and large supers. But it is not my purpose to advise beekeepers to change their system and the dimensions of their hives. Even with an 8-frame hive, the prolific queens may be accommodated. Doctor C. C. Mille uses a second brood-chamber for prolific queens and removes this, at the opening of the crop, leaving in the lower brood-chamber the best brood-combs. In some way, the queen should be accommodated during the heavy breeding season, and especially at the opening of the crop.

As an outcome of the first proposition, there must be ample room for stores. Some beginners are astonished to see old practitioners like Dr. Miller giving their bees as many as three supers at one time, on a strong colony. But if the queen is very prolific, and has been breeding plentifully as nature dictates, her colony may be able to work in each of two or three supers as strongly as they would work in one.

2. The use of comb foundation in full sheets in the supers when working for comb honey, or of fully built combs in extracting supers, has also a great deal of influence upon the prevention of swarming. True, full combs are much more efficient in this, but comb foundation aids greatly. There are days when the crop is so heavy that all the available cells are at once filled with nectar. If the bees have to build combs and thus find themselves crowded for room to deposit their loads, swarming may ensue. But with full sheets of foundation in every section, the work of comb building is much simplified and the necessity of producing sufficient wax reduced. Of course, it is understood that the supers have been supplied to the bees before they found themselves crowded for space, for if the swarming impulse is once gained, it is next to impossible to overcome it by any manipulations whatever.



ASHCROFT APIARY OF L. L. ANDREWS



HAULING BEES—L. L. Andrews

3. It will be entirely useless to expect the bees to remain contented and fill the supers, if the ventilation of the hive is inadequate to the requirements of the enlarged population. All observers have noticed the great tax imposed upon them by the simultaneous increase of heat and discomfort brought about by a summer temperature and a daily addition of some 2000 or 3000 hatching bees to the population of powerful colonies. Yet many beekeepers do not think of enlarging the means of ventilation. Thousands of colonies are compelled to leave a large part of their population idle, hanging

on the outside of the hive for days and sometimes for weeks, because they are unable to sufficiently ventilate the inside of the brood-chamber and supers. We must remember that every corner, every story of a hive is in absolute need of a current of fresh air which is supplied at great pains by establishing a line of fanning bees, incessantly forcing pure air in and foul air out. Yet in many colonies there may be but a shallow entrance, partly closed by clustering bees, and perhaps on the inside above the brood-combs there may be some partitions, queen-excluders, separators, honey-boards, etc., all in the way of ventilation. We raise our hives from the bottom, in front, from one to two inches, when there is a likelihood of the bees being unable to ventilate otherwise. We have even set the supers back a half inch or so, during the hottest days, to secure a current of air through the brood-chamber in very hot weather. But this must not be continued too long, for it might interfere with the storing of honey in the front of the supers if the weather changed. The bottom ventilation, however, must be ample, ample enough in fact to allow all the bees to work, so that none will remain clustering on the outside during the continuation of the honey crop.

4. As help to ventilation and comfort by decreasing the heat, a good roof is needed when the hives are exposed to the sun. We use coarse roofs on our hives, even when they are located in the shade of trees. Our roofs are made very cheaply of large discarded dry goods boxes and are flat. They are cleated with 2x2 inch scantling on the rear underside and a 1x2 inch strip under the front end. This secures a slope of an inch, which may be turned the other way to shed water in rear. The roofs are much wider than the hive and shelter the top from the effects of the weather.

5. The queen must be young. Some beekeepers believe in requeening every season after the honey crop. I do not believe in so radical a measure. In fact, I would not feel capable of killing a first-class queen after only one season of use. But I do believe in keeping only prolific queens and if the queen has proven under grade she should be replaced. Old queens who are losing their fertility are a frequent source of swarming. The workers prepare to supersede them, just as soon as they notice their reduced laying, by rearing queen-cells. The old queen in a pique leaves with a swarm. So we must replace our old queens every fall or late summer.

6. A large number of drones is an incentive to swarming. Some of the old-time beekeepers thought the drones were beneficial because the colonies having many drones swarm readily. They considered swarming a desirable thing. So it was, when dividing or artificial increase was unknown. They also thought the drones were useful in keeping the brood warm. So they would be if they did not have to be kept warm themselves when they are reared and also if the bees did not kill them, as they are sure to do, in bad weather.

There is not any doubt that the excess of drones in the hive promotes swarming. Those big, noisy fellows remain in the way, all day long, except for a flight during the warmest hours, being then still more in the way of the active workers. Although, as Dr. Bruennich says, there is a certain fondness of the workers for the drones, during the crop, which changes to hate afterwards when they see them helping themselves from their hard earned stores, yet their numbers make for discomfort and a crowded condition.

In a state of nature, according to the best authorities, bees build from one-seventh to one-tenth of their combs of drone size, in the brood-chamber. If only one-twentieth of the combs of a normal colony were filled with drone-brood, this would supply nearly 2500 drones per colony. We should permit only two or three of our very best breeders to rear so large a number of drones, for 5000 to 10,000 drones are enough for any apiary.

Some beekeepers see no way to destroy drones, but to use a drone-trap. That is to say, during the busiest, warmest season, when their bees need the greatest amount of ventilation, they place in front of the entrance a cage made to catch drones and queens, the very worst encumbrance that may be devised, for the sake of catching the drones as they emerge, having to remove them every evening or suffer the odor and encumbrance of dead drones in front of each hive.

Some other beekeepers think of doing better by cutting off the heads of the drone-brood, in the cells, with a sharp knife. This is a terrible mess. It compels the bees to pull out all those drones and carry them out of the hive. Then the same drone-comb is carefully cleaned and within a day or two the queen again fills it with eggs that will produce a second batch of drones. That is to say, we have spent a lot of energy rearing expensive drones, and now we are rearing another lot.

It is probably impossible to rear no drones at all, but if we remove all the drone-comb, early in the season, as nearly as we can, and replace it with worker-comb, there will be drones reared only in imperfect cells here and there or in out-of-the-way corners. Instead of rearing 2000 or more, we will perhaps rear 200 or less in each colony, a very important difference when we consider the comfort of the colony. Remember that if we leave the bees to their own devices, when we remove the drone-comb, in early spring they will be sure to build drone-comb in the same spot. So it is important to replace it with worker-comb.

It has often been stated that bees will tear down worker-comb to build drone-comb in its place. I believe this is an error of observation. Four different experimenters, to my knowledge, have tried the hiving of a swarm in a hive full of drone-comb. If bees would tear down one kind of comb readily, to build in the other kind, they surely would have done it in these cases. But in each case, the bees followed the same method. They did not tear the comb to rebuild it, but only narrowed the mouth of the cells to worker size and the queen laid worker eggs in them. The names of the experimenters who tried this are: E. Drory, of Bordeaux, former editor of the Rucher Du Sud Ouest; Mr. Thomas W. Cowan, editor of the British Bee Journal; Dr. Bruennich, of Switzerland, and myself.

There are instances, however, of bees building drone-comb on imperfect worker foundation. They are rare and are usually due to some defect of the foundation, which may have been stretched slightly in laminating. At the meeting of the beekeepers of Middlebury, Vt., the past summer, Mr. Crane mentioned having had about a dozen sheets of foundation thus changed, out of some 2000 used by him the past summer. These are only accidents. Accidents also are instances of bees building drone-cells on one side of the comb, while worker-cells are on the opposite side. In such a case the regular base is not followed and the cells lap over, showing plainly that they were irregularly built. Mr. Latham exhibited to me two square inches of such comb during the summer of 1916. These are only accidents. Such combs should be remelted and replaced by well built combs.

When we replace the drone-comb with worker-comb in all but our best colonies, we do away with undesirable drones, for the mating of the queens. We save food which would be wasted on these undesirable beings, since the drone costs at least one-half more to rear than a worker, and has to be fed as long as he lives.

Replace the drone-comb with worker-comb, as much as possible in your

ONE OF L. L. ANDREWS APIARIES IN THE WILD BUCKWHEAT

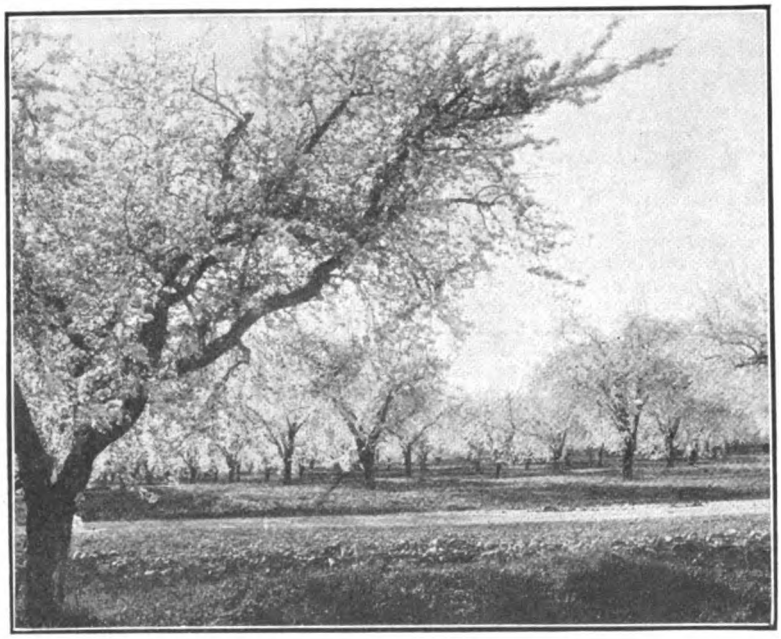
hives, early in the season and you will have much less to fear of the swarming fever.

7. The last condition which I can mention in the successful prevention of swarming is one which we have been using for years, but which I did not think of in that connection until the matter was brought to my attention by Mr. Allan Latham, the past summer. In exhibiting a hive at the Storrs meeting, Mr. Latham made the remark that the 1⅜ inch spacing of combs, from center to center, in common use, was a promoter of swarming. We have used the Quinby spacing of 1⅜ inches ever since 1866. The bees work as satisfactorily with the one spacing as with the other. In fact, the original advisors of either mode of spacing had no very positive argument to advance in favor of their method. But the 1⅜ inch spacing gives ⅛ of an inch additional between all the combs for the bees to cluster or move about during the breeding season. This multiplied by the height and length of the hive and by the number of frames gives an addition of 162 cubic inches of clustering space or ventilation, as the case may be. Think of the large number of bees which may be accommodated in such a space.

The standard hives of the present day are nearly all of the narrow kind. Nevertheless, the broader spacing is much the better, for the above named reason and also because it gives easier manipulation and more clustering space for the colony in winter. As I have said, we used the wider spacing for years, but I did not realize that our success in swarm prevention was in part due to this spacing. It is undoubtedly of great advantage in the prevention of swarming.

Let it not be understood that I lay any claims to the total prevention of swarming. That is a goal never to be attained. Neither do I lay any claim to breeding a non-swarming strain. But when some of our most practical beekeepers, such as I have met in the East, acknowledge, as one did, having had as many as 18 swarms out, at the same hour, in one apiary, I believe there is need generally of a more thorough understanding of the causes of natural swarming.

The advantages of this method consist in doing away with numerous hive manipulations during the honey crop, such as cutting out queen-cells, taking out brood, shifting colonies, returning swarms to the old hive, etc. All the required work outside of increasing the opportunities for ventilation and adding supers, has to be done during the dull season. I know that those who have excessive swarming, if they try these conditions, will find themselves greatly relieved by the results. Besides, they may be able to discover additional requirements, for there is always something more to be learned. If we are to judge of future progress by the past, there are endless opportunities for more knowledge, endless chances for progress.



MY NEIGHBOR'S PRUNE ORCHARD—(Photo by John R. Douglass)

My Neighbor's Garden

BY C. D. STUART.

I WOULD hesitate to call my neighbor a bore, as defined by a witty Frenchman. But whenever I attempt to talk about *myself* and my honeybees, he manages to switch the conversation to *himself* and his prune trees. I had been awaiting the opportunity to tell him that nature has no more effective pollinator than bees, and that without them he would have had no prunes to talk about; but the University beat me to it. A copy of their latest bulletin was sticking out of my neighbor's pocket when he arrived at my cabin on an errand of state—the negotiating of closer relations between his trees and my bees.

"Listen!" he began, excitedly shaking the bulletin in my face; "here's an old highbrow claiming that one colony of bees will pollinate 9991 prune blossoms. Yes siree, a genuine University guy!"

"You mean, one colony can pollinate one acre of trees, don't you?"

"No; blossoms. Man alive, just think of the number a hundred colonies would pollinate! If one tree has 9991 blossoms, 20 acres of trees would have——" There he stopped, found a newspaper and began to figure, on the margin, the benefits—to his prunes—of the proposed alliance.

With my neighbor, the juggling of figures has been elevated from mere pastime to the realm of accomplishment. He fairly "eats 'em." A scrap of paper, a stubby pencil, and millionaires spring into existence while you wait. Or, the same computations, done backward, and bankrupts are created with equal dispatch. It is not surprising, then, with such facilities at hand, that he himself has arisen—on paper—from the ranks of the small rancher, to the multi-millionaire class.

As for me, bankruptcy is a chronic condition, my neighbor having long since figured my bee ranch in the hills clean off the map, even pursuing it with strange-sounding words — one, more hostile than all the others, "depreciation," which, applied to any healthy enterprise will, in time, cause it automatically to disappear. By this mysterious calculation, I had already lost more money than in the wildest dreams I ever hoped to possess. (Luckily for me, the amount and price of my honey during this period of progressive disaster, remained normal.) Moreover, in his estimation, a beeman is a reproach to his family, a menace to the public and, socially, on a level with the herders of sheep and goats. To be strictly just, however, that is only my neighbor's *theory*. In *practice* his friendship has survived all handicaps.

On the other hand, my neighbor's fat valley land at "only $500 an acre," was about to be doubled, perhaps quadrupled, if the newspaper margin would only hold out. For if 1069 blossoms counted in the University experiment, could mature 193 prunes, nine times as many prunes would mature from 9991 blossoms, or over 1700 prunes to the tree; and with 100 trees to the acre of trees, he would harvest 3,400,000 prunes. Even now my bees stood only on a commercial footing, but at least they had been recognized. Somewhat saddened, I left my neighbor to his figures, and turned to the shimmering landscape with its background of purple hills framed by my kitchen window.

It was Blossom Day—California's unique, all-embracing, outdoor, democratic Easter, when all the earth is athrill with new life; a day that "when the ardent sun rides high, above the waiting trees; like fleeting clouds athwart the sky, range forth my honey-bees, my resurrected honey-bees," unconsciously to fulfill their mission.

All Santa Clara Valley was in its Easter frock, and throngs of visitors from far and near had gathered to witness the ethereal spectacle, before the ocean breeze should spirit it away. And somewhere in the heart of the Valley nestled my neighbor's prune trees, adding their quota of loveliness to the Annual Festival of Blossoms. But the miracle was lost on the man whose mind's eye saw only additional trays filled with fruit drying in the sun, that my bees would make for him.

"Millions in it!" he muttered, feverishly setting down the final additions on a fresh bit of margin. "Why didn't you tell me?"

"Never had a chance," I retorted.

But my neighbor characteristically waved all past losses, in favor of future gains. "Three million, four hundred thousand prunes!" he repeated, "and with 40 prunes to the pound——"

"The more you get the smaller they'll be," I reminded him.

"—— will make 85,000 pounds—three times last year's crop—and if the price should go to 15 cents a pound, they'll be worth $12,750. Gee; I'll lift the mortgage and buy a Ford!"

"I don't think I care to move my bees," I concluded.

"W-w-hy? Plenty of room, and you're welcome to it."

"Truck man charges two bits apiece to haul 'em, and bees get around pretty lively by themselves, for nothing."

"I'll pay the truck man," he argued.

"Nothing doing. Bees prefer areoplaning."

"I'll pay you rent for 'em, too," he urged. "With all that money I'll have a bully stake."

"Providing the weather man permits," I amended. "Bees don't fly in wind or fog, and prune blossoms last only a week at the longest. Besides, there are 21,000 acres of prunes in Santa Clara county, and only 6500 colonies to do the pollinating!"

But those basic truths that I had hoped would act as ballast in my neighbor's flights, were cast overboard with the remark, "Some job for the bees! What *this* county needs is more colonies."

The sun's slanting rays had tinged the valley's gauzy robes with gold; a few belated bees were flying slowly hiveward; and still my neighbor soared. He was doing the sums all over again to include statistics on bee-pollination under possible adverse weather conditions.

Los Gatos, Calif.

April Beekeeping Problems in the North

BY L. V. FRANCE.

[The following summary of reports received and advice given to the beekeepers of Minnesota, by L. V. France, of the University Farm, will find practical application in most of our northern States during this month. This problem does not apply south of the 41st degree, except in very backward springs.—EDITOR.]

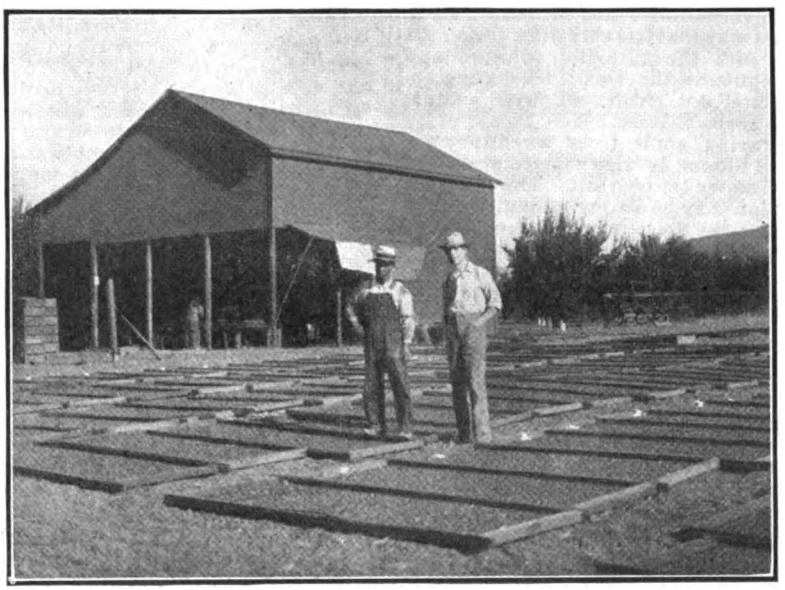
IN the Preliminary 1916 Beekeeping Survey of Minnesota, conducted by the University, Division of Bee Culture, reports gave information on the greatest April beekeeping problems. Bad weather, cold, rain, cloudy and windy, seemed to be the greatest evil, as 35.7 percent of the reports indicated. Twenty-five other reports named conditions that may be also directly influenced by bad weather, as to build up colonies; to keep them warm; to keep them strong; spring dwindling; to guard against sudden changes of temperature; lack of bloom until May, and inability to keep bees in the hives on sunny cold days. Seven reports considered proper windbreaks a spring problem; the brood gets cold and the queen stops laying. Over half, 56.0 percent, of the reports thus accuse bad weather as the greatest April beekeeping problem.

Food and feeding follow next in apparent importance, as eighteen or 11.4 percent of the reports indicated. Eleven of these reports were classified as "Lack of food"; six, "To keep bees supplied with stores," and one reports "Bees all right if honey lasts through April." Thirteen report 18.2 percent gave robbing as their greatest April problem. One answer tells its own story, "No April problems if I feed with narrow entrance." Lack of pollen was of sufficient importance as a spring problem to claim first attention in six reports, 3.8 percent. This lack of pollen probably is of more importance than indicated. "No April problems" is definitely reported by six parties.

Important miscellaneous and interesting questions follow: When to put on summer stands; queenless colonies; trying to handle bees in cold, damp weather; lack of knowing what to do in time; spring dwindling; rush of farm work causes bees to be neglected, and some die from robbing or starvation; many perish when searching for water; cover the hives to protect brood from chills; keep the hives sheltered; see that bees get water and pollen; no problems if fall feeding is adequate; old bees die too soon, etc.

WHAT SHALL I DO IN APRIL?

If the bees are all right in the cellar do not take them out until there is plenty of pollen, willow, soft maple, etc. Many bees are lost hunting for pollen when none is available close by.



"THE PRUNES THAT MY BEES WOULD MAKE FOR HIM"
(Photo by John R. Douglass)

If the bees demand removal from the cellar before pollen is available, keep them busy carrying in rye flour from a warm nook in the edge of the bee-yard. In another nook, provide good clean water. Don't let them fly far away in the cold for water. Many perish on such trips. Contract entrances so only two or three bees can pass at a time.

Examine your bees the *first* warm day after removal from the cellar, and if they have not food enough to last until May 20, give them *at once* enough warm sugar syrup, or better, combs of honey saved from last year, to last till June 1. Don't be afraid to give a colony too much food; they won't dump it out of the hive or waste it.

To prevent robbing keep all entrances very small, and don't spill any sugar syrup or honey outside of any hive anywhere. If robber bees pounce into a hive when it is opened, close it immediately and wait three-quarters of an hour, or until the bees quiet down. If a very weak, worthless colony has begun to be robbed, remove everything from the hive but one comb containing *a little* honey, contract entrance to one bee space and let the robber bees gradually take it. Usually the little honey will be robbed out and the robbers will be satisfied. If the whole hive being robbed is removed, the robbers may attack in force the next adjacent colony.

Protect your bees from bad weather until about May 15 or 20, by wrapping each hive closely with several thicknesses of heavy wrapping or building paper or tar paper, leaving the entrance open. When bees are used to the protection afforded by the cellar from the cold and wind; they do not "build up" readily. Their "overcoats" are removed and the larger percent of the population, made up of already old bees, cannot withstand sudden temperature changes and spring winds and storms. If you cannot protect all of your colonies, *try it* on every other colony in your bee-yard. See if it pays in honey returns.

Queenless colonies should be united with good colonies by placing them above the good colonies with a thickness of newspaper between and protecting the entire two stories with paper. The second story may be removed in four or five days. Keep the colony protected. A small number of colonies, well cared for in the spring, will usually bring more honey returns with less work than a large number with little or no care.

April beekeeping problems will prob-

ably vanish if good laying queens and proper food are supplied in the fall, if the bees are wintered in a good cellar and have sufficient protection to May 20.

University Farm, St. Paul, Minn.

Honeybees and Spraying

BY T. J. TALBERT.

MANY fruit growers and beekeepers believe that fruit trees sprayed with arsenical poisons are apt to poison honeybees. Some farmers go so far as to make the statement that entire colonies of bees are destroyed by the poisonous sprays applied in the orchards during the summer.

Careful experiments and observations extending over a series of years have shown conclusively that if the spraying is done at the right time but little if any harm will be done to honeybees. The so-called calyx spray or the application made immediately after the blossoms fall is the one to which most injury is attributed.

The calyx spray should not be made until the petals or blossoms begin to fall. If the application is made earlier than this it is not an effective spray against the codling moth and apple scab, the two most important pests to be controlled at this time.

Before the blossoms fall the reproductive organs of the flower (stamens and pistil) fill and almost close the calyx cup, thus preventing the poison from reaching the place where the majority of the codling moth worms take their first meal. At this time the little green calyx lobes are turned down in such a way that it is very difficult to coat them with the spraying solution and consequently the small developing apples are not protected well against apple scab.

Spraying apple trees when they are in full bloom is also apt to prevent a satisfactory set of fruit. The spraying solution may be strong enough to burn and destroy the reproductive organs of the flowers.

By the time the petals begin to fall, when the spraying should begin, practically all the nectar has dried up and the bees are not visiting the flowers. No injury can therefore be done to the bees if the sprays are applied immediately after the petals fall.

The sprays made in the orchard have a repelling effect upon the bees. That is, the strong sulphur smell tends to drive the bees from the trees. The liquid is very distasteful to them. There are, therefore, many reasons for not spraying when the trees are in full bloom, while there is not a single good reason for spraying at the time when the spraying may be dangerous to honey bees.

Columbia, Mo.

[We consider it very important to use some repellent in the sprays, for even if the spraying be done after the bloom has fallen there is a possibility of some of it falling on blossoms beneath the trees and poisoning the bees in that manner. There need be no clash between the beekeepers and the horticulturists on this matter since the bees are necessary for the thorough fertilization of the bloom. Their interests are identical.—EDITOR.]

Beekeeping in Carniola

BY FRANK ROJINA.

NEARLY three years ago I left Carniola, a State in Austria of 3886 square miles, with 525,000 population, to study American beekeeping at the University State Farm, under the supervision of Prof. Francis Jager. Carniola is a country with mountains rising to a height of 12,000 feet, the sides of which are covered with fir and deciduous leaf-bearing trees. For over 300 years the inhabitants (Slovenes or Slavs) have given many thousands of colonies, honey and wax as payment for taxes. From that we can see how educated were our grandfathers, by steady work with the Carniolan bees. In 1769, Empress Maria Teresa, of Austria-Hungary, took up bee-culture and appointed a Carniolan, Anton Jansa, professor of beekeeping in Vienna, making an appropriation of $600 a year that he might spend his entire time with the bees.

Jansa lectured at the public gardens in Vienna, also traveling around as an extension man, giving methods of beekeeping as practiced in his native State. It was something new to the people of Vienna to see a Carniolan hive, as they were using only straw hives. The Vienna township had used his methods and hives only three years when the production of honey and wax in two months' time was valued at $10,500 as against $2000 or $3000 before.

Jansa, himself, when he started in 1770 had only 16 colonies, and in two years' time increased his apiary to 300 colonies. During this time he discovered parthenogenesis and what we call the McEvoy foulbrood treatment, writing many articles for publication of this discovery. Not until a long time afterwards did the professors and people of Vienna believe in him. He discovered the drone was the male bee, fertilizing the queen while on the wing, and also that an unfertilized queen is no better than an ordinary worker-bee, laying only drones, while the fertilized queen lays two kinds of eggs in all the cells, unfertilized in the drone-cells and the fertilized in the worker-cells.

Jansa published a book entitled "Swarming," which was of great benefit. Later, his second book, nearly completed at his death, was published by one of his students. It is entitled, "Complete Information on Beekeeping."

It is too bad that Anton Jansa is not known among the American beekeepers. The Austrian beekeepers call him the first and Dzierzon the second great man in bee history.

All the beekeepers in Carniola have bee-houses, about 60x20 feet, and about 12 feet high, built of logs with brick foundations, the home of their bees for summer and winter. For the winter months these houses are provided with curtains made of straw mats which roll down on the outside, making the bee-houses wind and snow proof. There is very little packing done inside the bee-house, which is kept at an even temperature of about 50 degrees.

The principal hives in use are the Carniolan, measuring about 1600 cubic inches, with movable frames. There are a few box-hives. Many improved hives are used for experiments. These are the Vienna, Bohemian, all kinds of German, and a few American hives.

The principal honey flowers are the red buckwheat, which gives nectar only in the morning; red, white, blue, and yellow clovers, basswood, dandelion, which gives only pollen, blueberries, wild and common chestnut, which produce very dark honey, and many others. A pure Carniolan colony with a young queen may harvest in a year from 200 to 300 pounds of honey.

The extracted honey is put into bottles, pails, and small barrels and is sold at an average of 30 cents a pound. Some is sold in the combs, but the extracted honey brings a better price as it is used a great deal in cooking.

MODEL OF HONEY LABEL USED BY CARNIOLAN BEEKEEPERS

Since the outbreak of the war, I hear from home that honey sells for $2.00 per pound. Clean wax is made into cakes selling at about 53 cents a pound and is used in making candles for the churches. A colony of bees sells for about $4.00.

The Carniolan bee is in color silver or light gray. It is a little larger than the Italian, and is very gentle. Carniolan bees are very prolific, are good honey gatherers, and do not propolize as much as other bees. They cap their honey clean and white and are good resisters against moths and disease.

Carniola has a Beekeepers' Association which meets yearly and there are many subordinate associations, one for each township, which meet every Saturday. There are about 900 members in the head association. All the advertising matter is published in their monthly magazine, "The Carniola Beekeeper," the editor of which is Francis Rojina, my father. The estimated number of colonies in Carniola for the year 1910, was over 53,000; in all Austria over 2,000,000, with a product of more than $9,000,000.

From earliest boyhood I watched and helped my father with his apiary of 500 colonies, and he took me on many of his lecture trips and to the National Bee Association meetings. The happiest days were those with father on his trips into the deep woods on the mountain sides where he visited and bought the purest Carniolan bees. The best queens were carried home in small cages that were strapped to our backs.

To me the Carniolan bees are the best. The only fault the American beekeepers have to find with them is their swarming, and this is caused by using too small hives. As soon as they are transferred to hives that can be enlarged, giving the queen room to satisfy her breeding capacity, she loses her inclination for swarming without losing her prolificness.

University Farm, St. Paul, Minn.

The Advantages of Full Sheets and Bottom Starters in Sections

BY G. C. GREINER.

MANY years ago, when the use of foundation in sections was becoming more and more general, and our more experienced beekeepers began to advocate its use as a means of insuring increased surplus yield, whereby the honey industry would be materially advanced, I could not see it in that light. I did not doubt that the yield of surplus could be increased by the liberal use of foundation, but I feared that its unrestricted use in sections, on account of its "backbone feature," would eventually have a detrimental effect on the honey market.

To produce a first-class article of table honey, I imagined bees had to manufacture it themselves from the start, and to retain my reputation of furnishing my customers the best that could be got I used foundation for many years very sparingly, not more than one-inch starters, or perhaps 1½ inches at the most. I do not remember the exact circumstances that impressed that idea upon my mind, but I think my experience during those early days, when comparing naturally built combs with those built on foundation, seemed to decide in favor of the former. At all events that notion, and from my present view point I can call it nothing else, has cost me tons of honey during the past decades.

As time passed on, super foundation, thin and extra thin, continued being advertised right along; our most prominent beekeepers advocated its use year after year, and as much as I watched the effects on the honey market, I did not hear of any serious harm being done by its use. On the contrary, its advantages of producing heavier yields became more and more recognized by the progressive beekeeper.

At last, having the success of others daily before my eyes, I decided to set aside my prejudice and adopt the use of foundation in sections as part of my management. But I still believed that the quality of honey would deteriorate in the same proportion as the amount of foundation increased. For a number of years I increased my one-inch starters to two inches, and as I could see no bad effects by the change, but thought I could notice a slight gain in the yield of surplus, I launched out on the use of full sheets in sections.

Since I have inaugurated my method of doubling the yield of surplus honey and control swarming, I am trying in every way to give my bees all possible advantage for uninterrupted super work. Full sheets in the sections are a great help; no beekeeper can afford to produce comb honey (or extracted, either) without them; but they do not go far enough. To make a complete job of our work, we must add bottom starters in all our sections. Under certain conditions they do not add materially to the yield, at least not so that it can be readily noticed, but they are the means of having all combs solidly attached to the bottom, and that has more to do with safe shipping than being attached to the sides.

Some of our beekeeping friends do not consider bottom starters of sufficient benefit to pay for the time and labor it requires to install them, but I consider them a paying investment. During the season of 1912, when I used them the first time systematically, I watched them very closely when the white clover flow began. After nearly all colonies had taken possession of their sections, I found one in particular where no bees could be seen from above. It being one of my better colonies, or as good as any, I was somewhat surprised at their backwardness, and to ascertain the cause, if possible, I drew out one of their center broad frames. I was still more surprised to find them as shown by Fig. 1 of the accompanying drawing. They had begun to work from the bottom starter upwards, and had reached about half way towards the top.

Examining frames from other supers, I found them in endless variations as indicated by Fig. 2; they were working from both ends of the sections at the same time. I cannot positively say that bottom starters alone made all this difference, but it indicates very forcibly that they are a great help to the comb-honey producer.

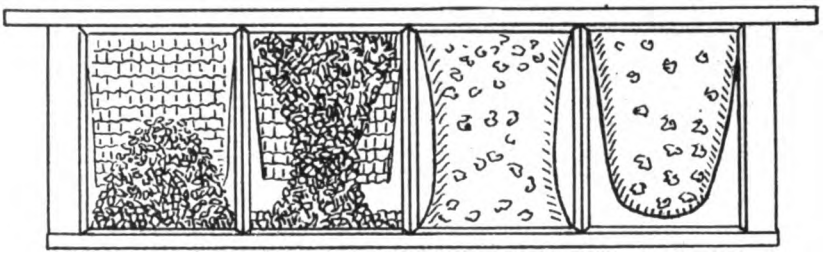
Later on, when I gathered up the last supers at and after the end of the honey flow, I found all sections, even the lightest, that had been supplied with bottom-starters, invariably like Fig. 3, while others, where for experimental purposes no bottom-starters had been provided, were like Fig. 4. If there were no gain in regard to heavier yield, the difference between Fig. 3 and Fig. 4 alone would amply pay the beekeeper for time and labor to install bottom-starters.

As an illustration of how easily we are led astray or deceived by wrong impressions, I will relate a little incident that transpired last summer.

When preparing my section supers for the campaign, I accidentally over looked inserting two sections into one of the broad frames. The space thus left was built out by the bees. Although there was no guide, from all appearance they did a model job, except that it was drone-comb. It being all natural, new comb, I expected that it would be far superior to the general grade of our section honey made on foundation, and to enjoy the treat, I reserved it for our own table. But imagine our surprise. Instead of finding a nice brittle article that would melt in the mouth, we found a tough sticky mess, every mouthful a fair sample of the toughest chewing gum taken from the penny-in-the-slot machine. It reminded me of our transferring days in the seventies, when we used to cut choice (?) pieces from veteran box-hives combs and considered them "delicious morsels."

This little episode removed the last vestige of the prejudice I still harbored and converted me into a thoroughly convinced full sheet and bottom-starter advocate.

La Salle, N. Y.



MANNER IN WHICH BEES CLUSTER WHILE DRAWING OUT FOUNDATION IN SECTIONS

Points on Queen Mailing

BY GRANT ANDERSON.

IN the queen business the first point to consider is the rearing of good, well developed queens. It is not necessary to have them extra large to be well developed and vigorous. A queen that is not strong will not stand a long journey in the mails.

The second point to consider is the cage. Just any old thing will not do. If the distance is short the small Benton cage will answer the purpose very well, but if the distance is so great as to take several days to deliver the queens, a larger cage should be used.

Seventy-five percent of the queens that I mail go in the large six-hole cages. These six-hole cages are not export cages, but will deliver the queens

CAGES OF DIFFERENT SIZES FOR MAILING QUEENS

in any part of the United States, Canada, Cuba, and Jamaica. For export cages I have an eight-hole cage. The blocks are nearly 6 inches long, 2¼ inches wide and one inch deep. The holes are an inch in diameter. Two holes at each end are filled with candy and the bees occupy the four central holes. The queen and escorts are put in through a small hole in the side. After the screen is tacked on, a thin bar of wood is placed across the cage at each end and in the middle, and over these three bars is nailed a thin wood cover. The six-hole long distance cage as well as the three-hole cage has a groove in each edge the entire length of the cage; and a saw kerf from this groove into the queen compartment furnishes ventilation.

Next, but not last, is the candy. The success or failure of the delivery depends very much on the quality of the candy. This must be made of the best powered sugar and well ripened honey of good quality. Make a stiff dough of the candy and let it set several hours and then work it over again. If too thin, knead in more sugar, but don't make it too dry. No water is needed in the cages if the candy is made right. Never heat the candy in making.

Last, and very important, are the escort bees; for long distance or for export the escorts should be selected with great care; for short distance most any bees will do, but I prefer the young bees at all times. Young worker bees that have had a flight and are ready for the field will be best for escorts; old bees will be most likely to die in the cages and cause the loss of the queen. The number of bees for the escorts will have to be determined by the weather. If cool, use many; if warm, use few.

Rio Hondo, Tex.

Bee Hunting

IF we are to consider the hunting of bee-trees from the angle of profit alone, probably there is no room for an article on this subject in the columns of a bee-paper. But we must all have some sport or relaxation, and the old bee hunters tell us that there is nothing more fascinating than the hunting of such trees.

Very few sections are so thickly settled but that the reader may find one or more trees in the adjacent timbers by a careful search, while there are still localities where the trees are so numerous as to have considerable wild bee population.

THE USUAL OUTFIT.

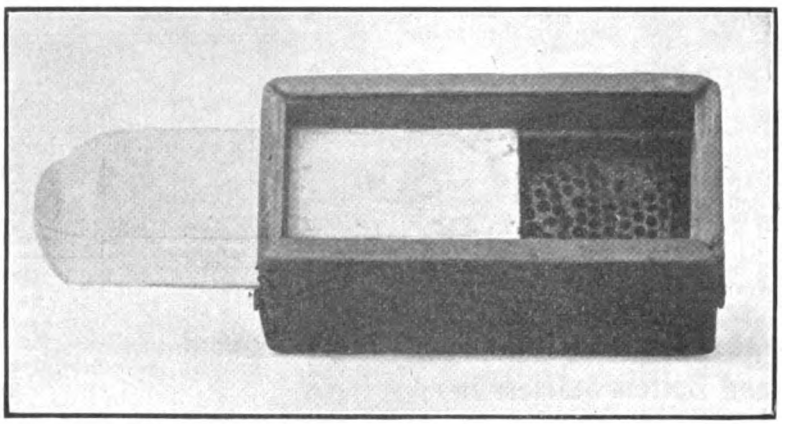
Bee-trees may be found by locating bees on flowers or at their watering places, and following them by "lining" to their home. The usual manner, however, is to be prepared with a bee-hunting box, a small piece of honey-comb, some anise oil, a little feed or bait (honey or sugar and water made thin enough to resemble nectar), a keen sense of observation and good eyesight.

THE BOX.

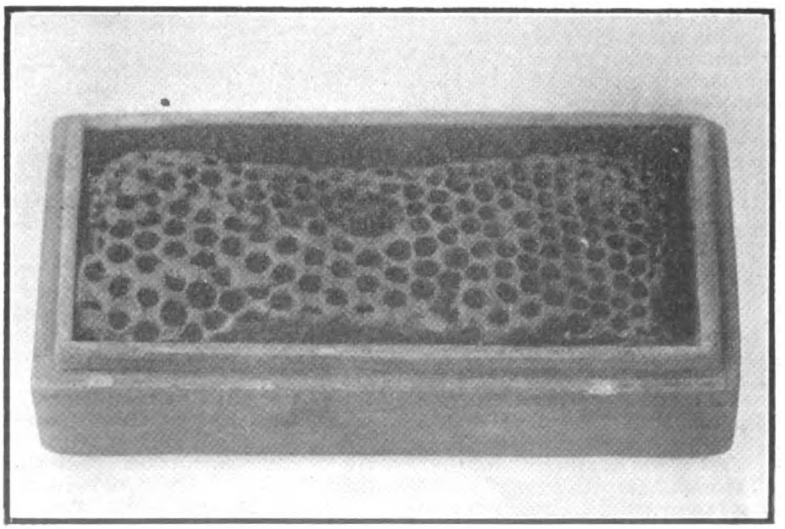
The one illustrated has been used by an old bee-hunter of Pennsylvania, W. H. McWilliams, who has located several hundred trees by the aid of it. It is an heirloom. The box is made in two parts; the lower part holds the comb with bait as in Fig. 1, and the upper part, fitting snugly over the lower, has on its lower edge grooves in which a cardboard is slid when desired, so that the bees may be separated from the bait below, or they may be caught in the upper box and then released to feed on the comb afterward. At the extreme top of the box is a glass, both to facilitate catching the bees on flowers and to give the hunter a means of observing the bees on the bait.

WHEN TO START, AND HOW.

Naturally bees are not apt to "decoy" best when there is nectar in the field. Every beekeeper knows that during a honey flow bees will ignore honey spilled here and there on the hives. They prefer the nectar from the flowers. So, in hunting bees in the woods, choose a time of honey dearth if possible. Early spring is best if you are after the bees alone. Late summer



A BEE HUNTING BOX



BEE HUNTING BOX WITH BAIT EXPOSED

and fall should be chosen if you wish to get the honey and are not so particular about the bees. Choose a location, of course, at considerable distance from any apiary and near woods where bee-trees are most probable.

GETTING THE FIRST START.

If possible, a bee is caught who is seeking early pollen or getting a load of water at some watering hole. The glass lid is placed over her; she flies up against it, the box is put together and she is a captive. Many old bee-hunters if unable to find bees otherwise will decoy them by burning honey and old comb to attract them.

After the bee is caught, the box is made dark to induce her to take of the feed, and while she is feeding the cover is carefully removed so as not to frighten her.

GETTING THE LINE.

As soon as she is filled, the bee will take flight, going first in circles very similar to those of a young bee except that they are elliptical with a gradual trend in the direction of her home.

At the first flight, the direction may be hard to get, but the bee will not be long in returning with re-inforcements and a line will soon be established so that the direction will easily be recognized.

HOW FAR YOUR TREE IS.

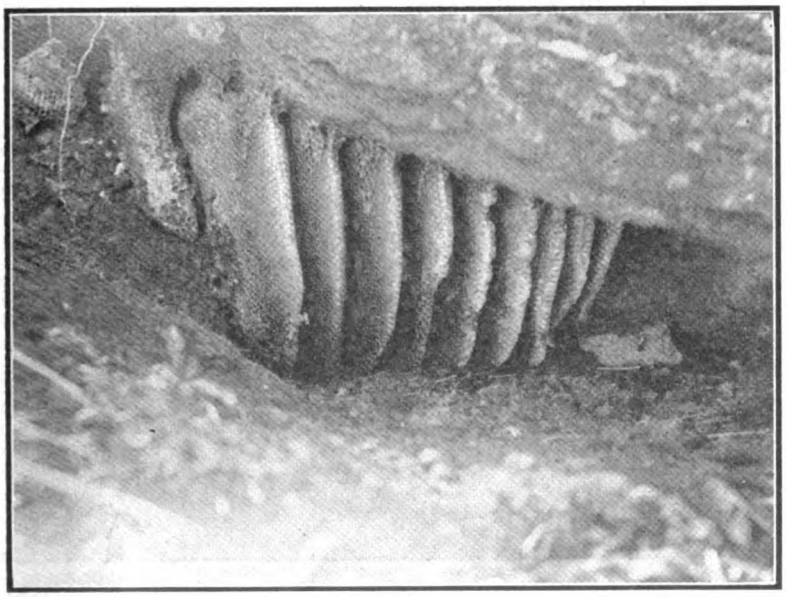
Mark one of your bees with flour, crayon or paint on abdomen just before she leaves the bait for home. If she is gone seven or eight minutes, the tree is a mile away. Each additional mile will take from five to six minutes.

CHANGING LOCATION.

When the line of bees has been well established and the approximate distance ascertained, it is an easy matter for the bee-hunter to move in the direction of the tree, leaving a little of his bait at the original location to keep the line constant. Always keep on the winward side of the direct line when moving towards the tree, then in case you lose the line more bees can easily be attracted to the bait. If the line is well established and is kept going by frequent stops to bait more bees, it will in most instances be easy to locate the tree.

The bee-hunter, new at the game, will many times, however, move too far at a time and may go past the tree. This can readily be told by the lessening of the number of bees working on his bait box, and also by the fact that the few he does get will go in the opposite direction.

Sometimes it is found expedient to "cross line"; that is, to establish another line to the same tree, starting with a few bees carried away in the box to another location. In most instances, however, this need not be resorted to.



A WILD BEE CAVE ON DANCER MOUNTAIN AT LLANO, TEX.

BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

Putting Full Sheets in Frames

What is the best way, to put in full sheets of foundation to prevent them being torn down when a swarm is hived upon them?

Would you recommend painting them with wax?

I have had so much trouble this way that I rarely use full sheets, but hive swarms on starters and get too much drone-comb. HANNAH R. SEWALL.

Forest Glen, Md.

It would be easier to advise if particulars had been given as to the way the foundation had been fastened, and then just what trouble occurred. In the first place, foundation should never be given to a swarm without being well fastened in the frame. If fastened to the top-bar by means of saw-kerf and wedge, the wedge should not be lightly pushed in, but crowded in tightly its full depth. If rather light foundation be used, it may pull out even with the wedge in full depth. In that case the edge of the foundation that is pushed into the kerf may be doubled, or a thin strip of wood such as a piece of wooden separator may be crowded in beside the foundation. Instead of the kerf-and-wedge plan, the foundation may be fastened to the top-bar by means of melted wax (or rosin and wax, half and half), and some use the wax in addition to the wedge.

No matter how firmly fastened to the top-bar, no foundation will withstand a swarm without being supported by wires or foundation-splints, and these should be well imbedded into the foundation. If they be pressed in when too cold, the bees may try to gnaw them out. The work should be done in a warm room or on a warm day. Electricity is perhaps the best thing to heat the wire when embedding it, but you can get along without it. Having your frame wired and the foundation well fastened to the top-bar, turn the frame flat, wires down, and hold it over the burner of a gas or oil-stove. While holding the frame with one hand, press down with a finger of the other hand upon the foundation directly over the heat, moving the frame slowly the length of the wire, and letting the finger slide along on the foundation. The wire heats quickly, and melts its way in while the rest of the foundation is still cool. A little practice will teach you how slowly to move.

If all this is well done, there should be no trouble about foundation falling down. Still, in the middle of a swarm is a hot place where the foundation may break down, and you will do well to have the hive well ventilated for a few days, with the cover raised half an inch or more.

If you care to take the trouble, you can have the foundation fastened into the frame in advance. Give a frame of foundation to a colony, either in the brood-chamber or in the extracting super, at a time when honey is coming in well, and the bees will fasten the foundation so there will be no danger that a swarm will break it down. It may take a day, or it may take three days. Here is one way to have a full set fastened. Go to a strong colony, and put half the brood-combs into an upper story. Have the brood-combs of the two stories alternated with frames of foundation, and in two days, more or less, the foundation will be well fastened and may be taken away. Of course, this cannot be done in a cool time, lest the brood be chilled.

Some succeed well by painting with wax the upper part of sheet.

May Disease

Last spring I sent to New York for a colony of bees, and they arrived on April 17, in what I thought was good condition. In May I was compelled to

move them 1½ miles. The weather was cool, and as the distance was short I put on an empty super and closed the entrance. However, there were quite a few bees dead when I released them, although they were not confined longer than an hour. Shortly after that they seemed to have a sort of May disease; they looked greasy and had large abdomens. I lost about half of the colony, but the disease finally disappeared. They were late in swarming, and as my queen was clipped, I intended to let the bees swarm but once. I hived the swarm in a new hive on the old stand, placing the old hive close beside it, thinking to move it in seven days to a new stand.

Swarm No. 1 came out on Thursday afternoon, and on Saturday morning swarm No. 2 came out. I hived this swarm in a new hive and placed the old hive back. The same hive had a third swarm three days later, but this time I cut out all queen-cells and returned the swarm with the virgin queen to the parent hive. They did all right for a while, then one morning I saw swarm No. 2 was excited about something. After a search I found their queen under the alighting-board which was slightly raised at one end. She appeared cold, and after warming her up she seemed spry again, but refused to enter the hive, although the bees were willing to accept her. I gave her some smoke and she went in, but soon came out again and wandered off on the gound, so I killed her and united swarms No. 1 and No. 2.

On Aug. 18 I moved to Mukwonago, and had to move the bees, and as they had their brood-chamber filled with brood and honey, I thought I would have bad luck in moving. I have the Langstroth hives, and took off the cover and bee-board, leaving an empty super over the brood-chamber, closed the entrance with a screen and tied cheese-cloth over the super. We loaded them and started off at 3:00 o'clock in the morning, getting there by 5:00. We released them at once after giving them a little smoke, and we did not lose a bee nor a drop of honey.

Number 1 and 2 stored about 25 pounds of honey in the super and raised an immense swarm of bees. The old colony did not store any and they are lighter in bees than the other hives, and before cellaring them I noticed some of the bees had a greasy look and quite a few died, and now in the cellar they have died off twice as much as the other colonies.

1. Why did the afterswarm come out so soon after the prime swarm?

2. Do you think it is bee-paralysis my bees have, and will it again appear in the spring? Is it a disease that is in the hive, and should the old hive be destroyed?

3. Does an old queen rear larger swarms than a young one?

4. Do you think my bees were lazy or sick that they did not work? There were lots of sweet clover, goldenrod and dandelions to gather from. Will they do better next summer?

5. Should I requeen or should I unite the two swarms in the hive with the old queen? The young queen has nice bees, all 3-banded and of good color. Do you think it would pay me to try her again, the old queen was a tested Italian? [Mrs.] C. White.

Mukwonago, Wis.

1. It is possible that when No. 1 was ready to swarm the weather was too bad, being cold and rainy, and this continued until the swarm came out about six days later than it could have done if the weather had been good, making it only two days longer until the first virgin was ready to go with the second swarm. A delay of that kind often happens, but it is rare that the delay is so long. So rare that another explanation is probable. The first swarm occurred on Thursday. On Wednesday or Thursday of the preceding week, it may be that a swarm, unnoticed by you, issued, and that the old queen was unable to go with the swarm, or was in some way lost, and the swarm returned. Then when the oldest virgin was ready, the swarm which you saw issued, and two days later the second of the young queens issued with another swarm.

2. As you describe it, it is pretty sure to be paralysis. It may appear again, but likely not. The hive is all right.

3. If you mean does a 2-year old queen have a larger swarm than a 1-year old queen, no. If you mean does the old queen that issues with the prime swarm have a larger swarm than the young queen that issues with the second swarm, yes.

4. Hard to tell. Possibly both. If there is no paralysis this year, they are likely to do better, provided it is a good year.

5. It would hardly be advisable to unite the two colonies. As the swarm was late the young queen didn't have the best chance, and may do better this year.

MISCELLANEOUS NEWS ITEMS

Prune Pollination.—Bulletin No. 274, of the California Agricultural Experiment Station has for its title, "The Common Honeybee as an Agent in Prune Pollination." It is written by A. H. Hendrickson.

It appears that insects are extremely scarce in the Santa Clara Valley at the time that the prune trees are in bloom, with the result that the crop is not so large as it might otherwise be.

Experiments were conducted with trees entirely protected from bees and other insects by netting, and with others having adjacent to them plenty of honeybees. The results were as usual; the bees' proximity resulted in a much larger set of prunes, especially with the French variety.

The best results will probably be obtained by bringing in bees from outside and scattering them about the orchard with at least one colony to each acre.

Nougat.—Three cups of granulated sugar, 1½ cups of any kind of nut meats (preferably English walnuts), ⅔ cup of honey, ⅔ cup of hot water, and the white of one egg beaten stiff.

Boil the sugar, honey and water together until they make a rather hard ball when dropped in cold water. Remove from the fire, pour in the beaten white of the egg and beat briskly with a silver fork. After beating a while, pour in the nut meats and continue to beat until it begins to make a hard creamy mass, then pour into a buttered

L. B. SMITH, OF TEXAS, GOT HIS START IN BEEKEEPING BY HUNTING BEE-TREES

tin or platter to cool.

No better, more wholesome or delicately flavored candy is obtainable at any price. Try it.

OREL L. HERSHISER.

The 47th Annual Convention of the National.—The National Beekeepers' Association was held in Madison, Wis., Feb. 6, 7 and 8. Owing to a severe storm and blockade north and east, very few members were present, about 70 in all.

The program opened in the afternoon on Tuesday with a "rouser" by N. E. France, in his address of welcome. President Francis Jager followed with the annual address. In the past year the National has obtained an appropriation (from the government) of $5000, for educational and extension work, and has obliterated the factional lines, thus paving way for future work. The future work should be on a broad scale, embracing all big activities of the National in separate sections under able chairmanship.

Doctor L. D. Leonard, of Minneapolis, Minn., spoke on the "Forks in the Road," metaphorically describing the wanderings of the National. He advised for future travel to organize three sections, the educational, the industrial and the legislative, with more to come as need arises.

The big discussion of the day followed an address by Dr. S. A. Jones, of the Bureau of Crop Estimates of Washington, D. C. Doctor Jones absolutely proved the correctness of the government honey crop estimates. To give a widespread benefit to beekeepers of the country, he remained another day to confer with a committee on a plan of cooperation between the National and the government office. The result of this conference was that henceforth the retail and wholesale price of comb and extracted honey will be asked and given out by the government to those who send in reports and to the officers of the National who will thus be able within a fraction to determine what the *real* price of honey ought to be at retail and wholesale.

Prof. Taylor, of the University of Wisconsin in Government office, spoke on accounting and cost and profit. The National has appointed a committee to cooperate with Prof. Taylor and the Government office of Accounting in order to get up a system of bee bookkeeping for larger producers. The National will probably be able to furnish this business book to its members free of charge as soon as completed.

None of the speakers for Wednesday were present. Dr. E. F. Phillips took up his paper on State and Government Aid in Educational and Research work. He first pointed out the necessity of such work, not in making more beekeepers, but better ones of those existing, calling attention to gross ignorance of bees and beekeeping methods even among the biggest men in the industry. "Some one suggested just now", he said "that there are among the members of the National some who do not know how to hive a prime swarm." The plan of the Government is to extend education to every State in the Union. North Carolina and Tennessee received one educator each last year on behalf of the National Beekeepers' Association, and the work these men are doing is as wonderful as the appreciation and cooperation of the people of these two States.

A lively discussion followed, and when the atmosphere cleared this was the result:

1. That the National go on record favoring further extension of educational and research work.

2. That this section of the activities of the National be put into a special section with a secretary in charge under the executive committee.

Dr. E. F. Phillips, of Washington, D. C., was chosen to act as secretary of this educational section.

A pleasant divergence was the banquet or dinner held at 12, noon, at Park Hotel. Sixty-two were present. Prof. Francis Jager acted as toast-master, and about a dozen good and funny talks were given, mostly by members from other States.

At 3 p.m., Colorado had its inning. Mr. Wesley Foster, of Boulder, Colo., spoke on Cooperation in Distribution of Honey, also on Imports and Exports, and Mr. H. Rauchfuss, of Denver, on the Colorado system of handling honey. Both papers were enthusiastially received, showing that the industrial part of the bee is nowadays uppermost in the people's mind. After a long debate and discussion a special section of the National was organized under the name of industrial section, with Mr. H. Polhemus, of Colorado, as secretary, to study national methods of cooperation and report next year. Mr. Frank C. Pellett, of Atlantic, Iowa, was appointed secretary of the legislative section.

Mr. C. P. Dadant spoke on State Fair and exhibits, but he widened out into a general boost for progress, which, from a man of his standing, will be a great asset for the National. Thanks

After supper the question of the National Central office was discussed by Prof. Eric F. Millen, of Ames, Iowa. The paper was so interesting that a discussion followed, after which the five points brought out by Mr. Millen, were unanimously adopted.

Hamlin B. Miller, of Marshalltown, Iowa, closed the program at 9:30 p.m., and if anybody was drowsy by that time they were soon wide awake and stayed wide awake whilst he spilled his "Pep" on "How to increase the membership of the National."

At the business session Thursday morning a resolution to stand by President Wilson was adopted and wired to Washington.

Other resolutions adopted, were, to refer the great questions brought up at this meeting to committees to work them out and report at the next meeting;

To print our own convention report as well as any other reports during the year and send it to members;

To procure money for such printing by every member present pledging himself to secure five new members for the National;

To appoint in the most promising States a representative or secretary to take care of the interests of the National in that State. The president was authorized to appoint such men.

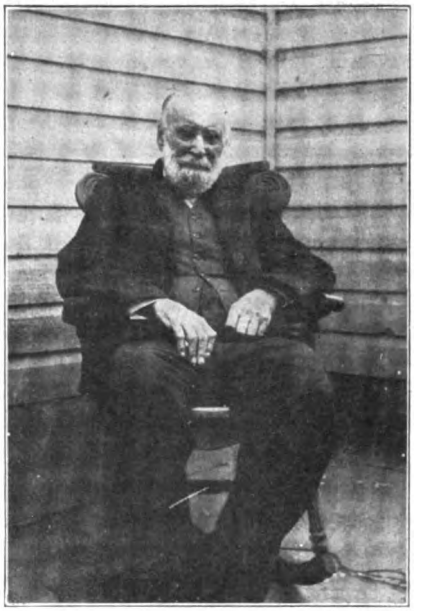
The nominating committee consisting of Messrs. C. P. Dadant, E. F. Phillips, and Wesley Foster, reported that they recommend as officers for the next year Prof. Francis Jager, of Minnesota, for President; Mr. J. Bull, of Illinois, for Secretary, and H. Polhemus, of Colorado for Vice-president. They were elected by acclamation, whereupon the meeting adjourned.

The meeting was permeated from beginning to the end by a spirit of encouragement, hope and good cheer, characteristically expressed in a message received from Dr. C. C. Miller.

FRANCIS JAGER, *Pres.*

John Vandervort, whose death was announced in our March number, was born in Schoharie county, N. Y., Jan. 6, 1832, and at the age of 12 years, with his parents, went to live at Laceyville, Pa. He remained in the family home until 1853, when he was united in marriage with Miss Harriet Montgomery, of Silvara, a year later going to Marengo, Ill., where he spent about 15 years.

In 1869, Mr. Vandervort returned East, locating in Binghamton, and three years later permanently settled in Laceyville. At this time he formed a partnership with his son A. L., going into the planing mill business for the manufacture of beehives, the son taking charge of the milling end while the father devoted his time to bees, which in the following years proved a very successful venture. The partnership of



THE LATE J. VANDERVORT

father and son continued about three years, and in the dissolution the son took the milling business while the bee industry was continued by the father.

While in Binghamton, Mr. Vandervort was for a time in partnership with Jones, who "pays the freight."

Mr. Vandervort was the first manufacturer of comb-foundation cylinders to make mills of different cell walls for the different grades of foundation. The first machines made by Washburne under the direction and management of A. I. Root, were very accurate, but no attempt was made by him at first to make cell walls of different depth and thickness, or at least only one grade was put on the market. Mrs. Frances Dunham, of Depere, Wis., about 1880,

put upon the market mills with a rounded cell which gave very satisfactory foundation. But this was a very heavy grade, as it was difficult to manufacture anything lighter than five square feet to the pound with her mills. Vandervort, who was a fine machinist, at the suggestion of the writer made mills with walls of different thicknesses and different depths. It was with his mills that the first separate grades of brood and super foundation were secured.

Vandervort was as warm hearted and generous as he was skilled in his profession. We used his mills for years, and I visited him in 1884, to suggest some improvements in his methods. He had a little shop about 12 by 12 feet, and in the midst of his skilled work, which required a great deal of attention, he would find occasion to help his neighbors. I remember his stopping from his work on a mill to repair a tool for a neighbor blacksmith, free of charge. He cared little for money, and I have before my eyes a letter from him, dated Sept. 2, 1884, in which he writes: "You sent me nearly $50 more than belongs to me, and for this I shall try to get even with you some future day." We never could get him to send us a bill for the numerous mills that he manufactured or repaired for us, and one of his favorite sayings was: "What a grand country America would be if it would only forget the Almighty Dollar."

Mr. Vandervort was thrice married, and of the first marriage in 1853, there survive two children, Mrs. Carrie Darrow, of Reading, Pa., and A. L. Vandervort, of Laceyville. In June, 1875, he was married to Emily Jane Fish, of Silvara, and of this union there survives one daughter, Mrs. Frank Creasy, of Berwick, Pa., and in 1890 he was united in marriage to Mrs. Ella Brown, of Golden Hill, who also survives.

Rhode Island Association.—The Rhode Island beekeepers organized a society at Providence Feb. 21. The outlook ahead seems very encouraging in power of members. The society is to meet frequently, place of meeting will probably be the Lecture Room of the Providence Public Library.

It is the intention of the society that any one interested in beekeeping shall not be overlooked. This is the only society in the State, and any one interested is cordially invited to become a member. Communicate with the President, Arthur C. Miller at the Providence Institution for Savings or the Secretary, Gardner B. Willis at the Providence Technical High School.

GARDNER B. WILLIS, *Sec.*

DR. MILLER'S ANSWERS

Send Questions either to the office of the American Bee Journal or direct to DR. C. C. MILLER, MARENGO, ILL.
He does NOT answer bee-keeping questions by mail.

Putting Dummies Between Brood Combs

1. I am getting to think that old brood-comb is much of an abomination and should unconcernedly be turned into wax. In order then to make good what is thus lost, what ways are there co-incident with regular honey production and with minimum sacrifice thereof, to get full foundation in brood-frames drawn out in maximum quantity so far as aforesaid not detrimental to honey production?

2. I am an opponent of the divisible brood-chamber; yet it seems that some offer a superior way for contraction, and thus sending bees up into the sections by confining the bees to one part of the brood-chamber. How can one approach this nearest when using 10-frame full depth Langstroth hives? Of course, by using dummies. Now according to Dadant, bees neglect sections that are not over frames. What would then be the best arrangement of frames of brood and dummies in such 10-frame hive, if there were therein four or five dummies per hive?

PENNSYLVANIA.

ANSWERS.—1. The best scheme for getting combs drawn out depends somewhat on circumstances. With natural swarming, or even with shake-swarming, probably the best time is to give the frames of foundation at the time of hiving or shaking the swarm. In other cases a good way is to have combs drawn out in a super.

There may be some peculiarity in your case that makes old combs objectionable, but did you never notice that when bees are given their choice they prefer old combs to new? I have been keeping bees more than half a century, and I've never yet turned down a comb because of old age.

2. The Dadant opinion is entirely correct. Put four or five dummies in one side of the brood-chamber, and the sections over the brood will be finished while the outside sections over the dummies will be hardly touched. Well, is there any other way but to put the dummies between the brood-combs? Had thought of that, hadn't you? but you thought it would hinder the queen from going from one frame to another. Well, it won't, for I have tried it. It might, if you should put the dummies in a bunch in the middle of the hive, but scatter them, with only one in a place, and it doesn't seem to hinder the queen from keeping all combs occupied. For all that, I don't believe you could coax me to try to limit the queen's room in that way.

Putting Up a Hive

Last spring I bought a lot of hives which were shipped to me knocked down. I put them together, and among the lot, for each hive, was a board ¼ inch thick, and as long and wide as the hive. This board has a hole in the center 3¾ inches long and 1¼ inch wide. The question is, where does this board fit in? Does it go on top of the brood-hive under the super or on top before the metal top is put on? ILLINOIS.

ANSWER.—It goes on top of the brood-chamber, under the super (when there is a super on). The slotted hole may take a Porter bee-escape, and it may also serve to put a feeder over. Don't use that board during the honey crop.

Miscellaneous Questions

1. In working for comb honey, is it essential to use excluders to keep the queen from laying in the super?
2. How many colonies of bees are there in Illinois? In Canada?
3. Is it necessary to put bees in the cellar or use winter packing cases in this locality?
4. Is it essential to provide shade for bees to prevent their swarming and leaving the hives?
5. Which is better for the production of comb honey, the 8-frame hive or the 10 frame?
6. From an article in the Canadian Horticulturist and Beekeeper for July, 1916, headed, "Beekeeping in Holland," I inferred that straw skeps were used in place of the modern movable-frame hive. Has the movable frame hive ever been introduced there and disliked, or is it unknown?
7. I bought two colonies of 3-banded Italians in July, 1916. A neighbor did the same, and bought bees from the same apiary. His made a super of honey and enough stores to last them through the winter. Mine made only enough to last them through the winter. From careful watching I ascertained that mine flew in large circles about the apiary gathering very little honey when a field of white clover in full bloom was within a hundred yards. What was the matter with them?
8. What is the best method to entice bees from a hollow tree or log into hives?
9. How cold does it have to get to kill bees in winter housed in 8-frame hives with no packing cases and in the open?
10. Which method is the better in a queen-rearing apiary, the Ben G. Davis plan or J. M. Davis plan?
11. Which is the sweetest, honey, molasses or sugar?

ILLINOIS.

ANSWERS.—1. I don't use excluders under sections, as I think they are generally used. But I have sections filled with worker foundation. If you use small starters in sections it may pay you to use excluders; otherwise the queen will go up to lay in the drone-comb the bees are sure to build in sections when only starters are present.

2. I don't know.

3. You are in latitude about 39 degrees, and will do better to winter outside.

4. It is not essential, but better for the bees, and better still for the beekeeper.

5. All things considered, the larger hive is better.

6. Holland, I think, is like some other European countries, where some use movable-comb hives, but a good many have not yet advanced so far, same as in some parts of our own country. I don't think there is a country in the world where movable combs have been rejected after fair trial.

7. One colony may have been stronger than the others, or the bees may have been better. Possibly the management may not have been the same. If the bees got nothing from the white clover, it was no doubt because the clover yielded no nectar. That happens a good many times.

8. I don't know of any way to entice them out. They must be forced out by means of smoke, carbolic acid, etc., or the tree felled and cut open.

9. That depends on many things. A colony weak enough may succumb to a temperature above freezing, if that temperature be long enough A colony strong enough, with stores enough, will defy the mercury to get low enough to kill it.

10. Like enough the Ben G. Davis plan is better for the son, and the J. M. Davis plan for the father.

11. If you touch your tongue to each of them in succession, you will probably say honey is the sweetest. But I have never been able to find out for certain which of them would go the farthest in sweetening, say a batch of dough, although I have tried to do so.

Checking Swarming

In "Fifty Years Among the Bees" you advise, before the bees become crowded in the spring, to place a brood-chamber with empty combs under the colony to check swarming, etc. How would the plan work to substitute full sheets of foundation for empty combs? PENNSYLVANIA.

ANSWER.—Foundation will do well. After one has been in the business some time, however, there will generally be drawn combs on hand, and they will keep better to be in the care of the bees

Weight of Sections—Foulbrood—Size of Hive

1. What should a section of honey weigh some say from 10 to 13 ounces for a pound?
2. How can you tell when bees have foulbrood? What time of the year do they get it and how can it be cured?
3. Would a hive 17 inches long and 12 inches wide be large enough for an average colony?
IOWA.

ANSWERS.—1. The Colorado rules require a section of fancy honey to weigh, with the wood, 13½ ounces; No. 1, 12 ounces, and No. 2, 11 ounces.

2. Write to Dr. E. F. Phillips, Department of Agriculture, Washington, D. C., and he will send you a number of pages that will give you full information.

3. That is a little smaller than the 8-frame Langstroth, which is generally considered hardly large enough.

Flowers for Pollen

What varieties of garden flowers are best suited to furnish pollen and nectar for bees? OKLAHOMA.

ANSWER.—Mignonnette and sweet alyssum are good, but unless you plant by the acre it will not amount to much.

Swarming—Requeening

1. Will cutting out the queen-cells in the brood-chamber about every ten days during the summer prevent swarming and induce the bees to make more honey?
2. My bees are a cross between the black and yellow species. They are not very good workers, and the swarms that issue are small. I wish to change to pure Italians. Do you advise the pound package of bees or requeening with Italian queens? Would the young queens be pure Italian?
QUEBEC, CANADA.

ANSWERS.—1 Killing queen-cells every ten days will delay swarming, at least for a time; in some cases it will prevent it altogether; but generally the colony will swarm sooner or later in spite of cell-killing.

2. The result will be the same whether you get a queen in a queen-cage or in a pound package, only with the queen-cage you run the risk of introducing. The young queens you rear from your new stock will be pure if they meet pure drones, otherwise not.

Increase—Swarm Prevention—Superseding

1. I have now four colonies which I hope to carry over winter. I would like to increase these to eight, preferably by the shaken swarm plan, but I am at a loss to know how to treat the old colony so that they will rear a good queen from the cells that were started before the shaking was done. But suppose they do not get the swarming fever, what then? Wouldn't it do just as well to divide the colonies sometime in May, following the plan you gave to "Pennsylvania," in answer to question No. 3, page 245 of the American Bee Journal for July, 1916?
2. If I follow this plan, will that end the swarming for the year? Will they gather as much surplus as if they had been shaken instead of divided? I might watch and wait for signs of swarming until it was too late to make the increase by division.
3. If I increase by shaking, wouldn't there be a good queen reared in the old colony if I do not shake clean, but leave some of the bees on the frames?
4. My bees are in the country six miles from here, and I do not see them every day. I had but one colony last year, and this colony swarmed about the middle of May, when there was no one there to hive the swarm, and it got away. I did not know this until about four days after the swarm came out. Not knowing what to do then to prevent any afterswarms, I let matters take their own course, with the result that there were more swarms when I was not there, and all left for the woods. In spite of this I got about 40 pounds of fine honey from this colony, mostly in shallow extracting frames What would have been the proper course to pursue in order to prevent any afterswarms, when I got there about four days after the first swarm issued?
5. How do you tell when the bees are gathering honey, and when the flow ceases? It is easy with pollen but not with honey.
6. I bought two colonies last summer, and I find that some of the brood-frames are not wired. Two of the combs fell out of the frames while looking over them. I would like to replace these frames with others that are not wired. When would be the best time to do this so as not to interfere with brood-rearing? I will have to use new frames with full sheets of foundation, as I have no drawn combs.
7. How can I tell, when queen-cells are found in a hive, whether there is to be swarming or superseding?
8 If, when superseding, the bees build more than one queen-cell is there any danger of swarming?
9. I sometimes find turban-shaped enlargements of cells in the hives. Are these the beginning of queen-cells or an indication that the bees are in a swarming humor?
10. I always thought that the longer a colony was without a queen the more readily they would accept one when introduced, but after reading that editorial, "The Meanest Colony," etc., on the first page of Gleanings for July 1, 1916, I am all at sea. If I should find any of mine queenless at any time I wouldn't know what to do.
11. I can buy some 8-frame hives with supers for $1.00 each, all in good condition. Would you advise doing this or would it be better to get new *10-frame hives* at about $5.00 each?
12. If I give a queenless colony a frame of brood with larva less than three days old and they start several queen-cells, will there be any swarming, or will the first queen out destroy the other cells?
13. What will happen to a colony that has a laying worker in the fall and is left in that condition until spring?
14. How can I, as advised, use the strongest colonies or those that swarm the least, for the crop, and at the same time breed from them, so as to build up all around.
PENNSYLVANIA.

ANSWERS.—1. It will be all right *provided* the colony is strong enough in May. If not very strong then, wait until June.

2. You cannot reply upon it for an absolute certainty, but the likelihood is that there will be no swarming. It isn't necessary to wait for signs of swarming; sometimes a strong colony goes through the whole season without offering to swarm. The important thing to watch for is the proper strength.

3. When you shake and put the brood in a new hive *on a new stand*, even if you leave quite a force of bees on the combs, there will be no field bees coming into the hive for two or three or more days, hence no honey coming in, and the bees will be in a discouraged condition, in no mood to rear a good queen. You can, however, take the queen away with two frames of brood and adhering bees, putting her on a new stand, then a week later shake your swarm, leaving nearly all the bees with the queen on the old stand, and on the new stand (where the queen has been during the previous week) all the brood but one. But instead of shaking off the bees you must brush them off the combs, for the shaking would ruin the queen-cells. However, it will be all right if you leave at least one frame without shaking, provided it contains one or more good cells.

4. If the queen had whole wings, and the swarm absconded with her, and you got there four days later, you might at that time kill all cells but one You might also, on that fourth day after swarming, take all but two frames of brood with adhering bees, and put them in a new hive on a new stand, beside the old one. Then a week later, when there would no longer be any young queens left in the cells (they would have emerged or else been killed) you would return to the old hive all the brood and bees you had taken away.

5. It is hard to say for certain whether a given colony is gathering or not at a given time. But there are some things by which you may make a pretty good guess. When honey is yielding abundantly, you will see the bees flying in and darting out of the hives like mad, appearing in the greatest haste. They are likely to be much crosser when no honey is coming in. One of the best signs that the flow has ceased is to find the bees suddenly become very cross. They will also be more listless about flying in and out of the hives.

6. Notwithstanding the apparent incongruity, the best time is when the bees are most busily engaged at brood-rearing.

7. You cannot be sure about it. If you find a dozen or so of cells at a time when bees generally swarm, you may be pretty sure that the bees have thought of swarming. If you find not more than three or four after swarming is mostly over, you may guess that supersedure is intended.

8. Yes, an increased flow of honey or something else may induce the bees to swarm when otherwise there would have been superseding. Conversely, a check in the honey flow, or something else, may turn the bees from swarming to superseding.

9. They are the beginnings of queen-cells, called cell-cups; but may be found in the hive almost any time of year, having no reference to swarming.

10. Do just the same as you would have done if you never had seen that editorial, only now you know that when bees are queenless a long time they become somewhat reconciled to their queenless condition and resent the intrusion of foreign royalty. So when you find a colony queenless, generally you will move just as soon as you can to supply the deficiency.

11. All depends upon the relative value you place upon working with the two kinds, and what is to be your future course. If you intend to continue using the smaller hives, by all means take advantage of the offer at $1.00. If you expect afterward to use the larger hive, it might hardly be worth while to take the smaller as a gift.

12. That depends. If it is swarming time, and the colony strong, you may expect swarming; otherwise not.

13. The bees may be all dead by spring; if not, there will be a few of them, and it would be better if they were all dead. Only when you say *a* laying worker, you should understand that a large number of laying workers are likely to be present.

14. I am a bit puzzled to know when you were advised to use your very best queens, *always*, for the crop. When a queen has established her reputation for superiority in any given year, it's a good plan the years after that to keep her in a nucleus, so as to let her live as long as possible, without expecting her bees to help on the surplus. However, it's no trick at all to keep her in a strong colony, working its best on the harvest, and at the same time to breed from her. All you need to do is to take from her a small amount of very young brood, to be used in rearing queens in other strong colonies made queenless for a time.

To Incite Swarming

My bees do not swarm until after the commencement of the honey flow, which commences about July 10. Could I in any way cause them to swarm before that time. Here we have very little fruit bloom and some dandelions. If I can cause them to swarm before the honey flow I can get much more honey. I run for comb honey. NEBRASKA.

ANSWER.—If there is at any time a dearth of a week or more, when there is no pasturage for the bees, you might feed during that time. You might also get some of the colonies to swarm earlier by giving them sealed brood or bees from other colonies. Of course you can have recourse to artificial increase by any of the methods given in your bee-books. I am somewhat skeptical as to your getting more honey by having swarming earlier.

Bees Poisoned from Spraying

1. What size of mesh should a wire-screen be to prevent bees from feeding through it?
2. Does poison such as bees get from the sprays in orchards kill them if they carry it, or must they eat it to affect them?
3. Do working bees eat nectar or honey from the hive?
4. What time of day do they eat when there is a good flow on?
5. I would like to keep six or eight colonies in a district where there are orchards. I kept a number last summer, but the fruit spray poisoned them. Is there any way to work them so the spray will not kill them, or so they will not carry the spray? The spray is on at two different times of about three days each. I don't care to shut them up. Would they continue to go to the fruit bloom if each colony was divided into nuclei and each nucleus was fed with a stimulative feeder? WASHINGTON.

ANSWERS.—1. I don't know that screen is made with so fine a mesh that bees on one side cannot reach through to feed bees on the other side. To prevent that you can have two screens one-fourth inch or more apart.

2. I am not sure, but I suppose taking the poisoned liquid into their honey-sacs is enough to kill them.

3. Both, I think.

4. I suppose at any or all times.

5. I don't believe feeding in nuclei would prevent the bees from getting the poisoned spray.

Bees Resisting Foulbrood

1. A year or so ago J. L. Byer made the statement that a young vigorous pure-blooded Italian queen was immune from the contagion of European foulbrood. What is meant by an immune Italian queen? Are we to understand that the pure blood of the queen overcomes the germs of the disease by the law of phagocytosis?

2. If a colony of bees becomes infected with European foulbrood and the queen is caged for ten days, or a young vigorous queen is introduced at the end of ten days, and the disease disappears, in what manner or under what law would the disease be eliminated? Would it be by the police force of the bees made vigorous by being made queenless?

3. If a colony of bees die from foulbrood and the fixtures and dead bees removed, and a colony of bees, honey and brood in all stages absolutely pure placed in this diseased hive and the disease appeared again, in what way would the germs enter the larval bee?

4. Can a foulbrood germ come into existence in any other way only through the larval bee?

5. Why do good men say their bees are so vigorous and strong that they resist the foulbrood germs, and do not tell in what way they do it? PENNSYLVANIA.

ANSWERS.—1, I suppose that by an immune Italian queen is meant a queen whose progeny is immune to European foulbrood, that is, would not contract the disease; but I never saw it claimed that phagocytosis had anything to do with it.

2. I don't think any one has claimed that the colony has become more vigorous by queenlessness. I don't know that any theory has been advanced to explain how the cure takes place through queenlessness, except the one advanced by myself. Since no one to my knowledge has objected to it, and since no other theory has been advanced, it is possible that my theory may be correct. The theory is this: It is well known that when a larva is crushed, the bees promptly lick up the juices of the crushed larva. When a larva is affected by European foulbrood in a short time it dies, and then the workers will suck its juices, and then when they feed other larvæ the disease will be conveyed. But that's only for a short time; as soon as the dead larvæ becomes decayed and unpalatable, the nurses will have none of it. Suppose now the queen be caged, killed, or removed. In about eight days all the brood will be sealed, and there will no longer be any chance for the nurses to eat diseased juices. Indeed, they will probably have ceased before that time, for the diseased larvæ will be mostly so far decayed that they are not to the taste of the worker. Then let egg-laying begin again in the hive. It will be three days before there are any larvæ to be fed. By that time the nurses will have nothing but wholesome food for the babies, and generally the disease will not again appear. Plenty of the disease in the hive, but not in condition for the nurses to consume it, and so it is not fed.

This theory may serve until some one proposes a better one. At any rate it works out all right in actual practice, that's the important thing.

3. Under the circumstances you mention I should not expect the disease to appear at all. But if it did it would be by the germs being fed to the larvæ.

4. In the hive, no; although scientists may rear the bacilli from the spores with any larvæ.

5. I don't know why they don't tell; possibly they don't know, and possibly they don't think it very important to understand any farther than to know how to get rid of the disease. As to immunity from the disease because of vigorous bees, I have doubts as to there being any bees that are entirely immune; but a vigorous colony will do better work at cleaning out the diseased dead brood than will a weak colony.

Quality Service System

SAFE ARRIVAL GUARANTEED

We are doing business under the above conditions. All orders received by us will have our immediate attention. Our STOCK HAS NO EQUAL. NEVER before have we been in the position to take care of our orders as WE are now. We have enlarged our **queen-rearing and pound package business.**

Remember all orders accepted by us will be filled by return mail or express if WANTED. If WE can't do it, WE will refund your money at once. You will be perfectly safe by placing your order with us for PROMPT DELIVERY. We quote prices as following:

	1	6	12
Untested	$1.50	$ 7.50	$12.00
Tested	2.00	10.50	18.00
Select tested	3.00	15.00	24.00

Select breeder, $5.00. Extra select breeder, $10

Bees by the Pound Without Queens

	1	6	12
1-pound bees	$1.50	$ 8.00	$15.00
2-pound bees	2.50	14.00	27.00
3-pound bees	3.25	18.50	35.00

Prices of Nuclei Without Queens

	1	6	12
1-frame	$2.00	$10.50	$18.00
2-frame	2.50	12.00	22.00
3-frame	3.50	20.00	37.00
5-frame	5.00	23.00	44.00

Our mail and express service is the best, 24 outgoing trains daily. WE guarantee all queens to be purely mated. All bees free from any disease. Place your order with us and get **Quality, Service and System.**

J. E. MARCHANT BEE & HONEY COMPANY, Columbus, Georgia, U. S. A.

QUEENS

Quirin's Improved Superior Italian Bees and Queens. They are Northern Bred and Hardy. 25 years a Queen Breeder.

PRICES	Before July 1st			After July 1st		
	1	6	12	1	6	12
Select untested	$1 00	$ 5.00	$ 9 00	$ .75	$ 4.00	$ 7.00
Tested	1.50	8.00	15.00	1.00	5.00	9.00
Select tested	2.00	10 00	18.00	1.50	8.00	15.00
2-comb nuclei	2.50	14.00	25.00	2.25	12.00	22.00
3-comb nuclei	3.50	20.00	35.00	3.25	18.00	32.00
8-frame colonies	6.00	30.00		5.00	25.00	
10-frame colonies	7.50	38.00		6.00	32.00	
½-pound package bees	1.50	7.00		1.00	5.00	
1-pound package bees	2.00	10.00		1.50	8.00	

BREEDERS.—The cream selected from our entire stock of outyards; nothing better. These breeders $5.00 each.

Can furnish bees on Danzenbaker and L. or Hoffman frames.

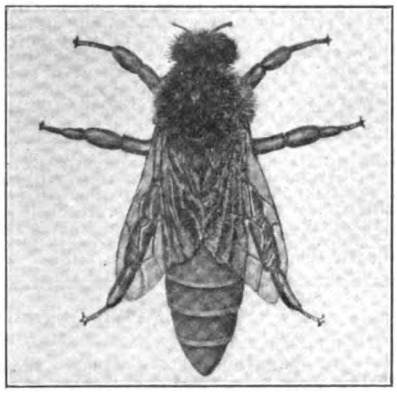
Above price on bees by pound, nuclei, and colonies does not include queen. You are to select such queen as you wish with the bees, and add the price.

No bees by pound sent out until first of June. Also nuclei and colonies, if wanted before June 1, add 25 percent to price in table.

Breeders, select tested, and tested queens can be sent out as early as weather will permit. Send for testimonials. Orders booked now.

Reference any large supply dealer or any bank having Dun's reference book.

H. G. QUIRIN, Bellevue, Ohio



Finest ITALIAN QUEENS

We have on hand a limited number of select tested queens that were reared during the light honey flow last September, and were wintered in large nuclei. We are offering these queens for $2.50 each, safe arrival and satisfaction guaranteed. Will be shipped any time desired, as soon as weather will permit. If supply is exhausted when order is received, money will be promptly refunded..... Send for booklet and price list of queens and bees by the pound.

JAY SMITH
1159 De Wolfe St., Vincennes, Ind.

Classified Department

[Advertisements in this department will be inserted at 15 cents per line, with no discounts of any kind. Notices here cannot be less than two lines. If wanted in this department, you must say so when ordering.

BEES AND QUEENS.

PHELPS' Golden Italian Queens will please you.

FULMER'S Gray Caucasian queens are winners; also by frame and pound.

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

TRY ALEXANDER'S Italian queens for results. Untested, each, 75c; 6 for $4.25; $8.00 per dozen. C. F. Alexander, Campbell, Cal.

PLACE your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens. John W. Pharr,
Berclair, Tex.

PHELPS' Golden Italian Bees are hustlers

VIGOROUS prolific Italian queens $1.00; 6, $5.00, June 1st. My circular gives best methods of introduction. A. V. Small,
2303 Agency Road, St. Joseph, Mo.

FOR SALE—7500 pounds of bees in combless packages, starting April 1, 1917. Better write us before it is too late to have your order booked. Marchant Bros.,
Union Springs, Ala.

MY BRIGHT Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

FOR SALE—Bright Italian queens at 75c each; $7.50 per doz. Ready April 15. Safe arrival and satisfaction guaranteed.
T. J. Talley, Rt. 3, Greenville, Ala.

FOR SALE—Forty colonies of Italian and hybrid bees; all in 10-frame hives with good worker combs. B. A. Manley, Milo, Iowa.

YEAR old Italian queens, $6.00 a doz. Bees by the pound April and May delivery. Good bees, queens, service, and satisfaction always. Write for prices at once.
S. Mason, Hatch, New Mex.

MINNESOTA bred Italian queens. Virgins, 45c; mated, $1.00. O. C. Wandrie, Frazee, Minn

ITALIAN BEES, 20 colonies, $5.00 each, if all are taken. John Fagin,
Rt. 32, Box 36, Ferguson, Mo.

TRY my very best Caucasian-Italian tested queens at $1.00 each. Hybrids at 25c each.
Peter Schaffhauser. Havelock, N. C.

BEES WANTED, any quantity, in N. J. on line of C. R. R. of N. J. or Penn. R. R. State kind of hive and price to T. Edward Diener, 28 Jacques St., Elizabeth, N. J.

FOR SALE—100 colonies well kept Italian bees. Are located on city lot. Too many stands. All in 10-frame hives.
Geo W. Landers, Clarinda, Iowa.

HEAD your colonies with some of our vigorous young three-banded Italian queens. Untested, June 1, $1.00; per doz., $9.00; nuclei and full colonies. Satisfaction guaranteed.
A. E. Crandall & Son, Berlin, Conn.

GOLDENS that are true to name. Write for testimonials; one race only. Unt., each, 75c; 6, $4.25; 12, $8.25; 50, $32.50; 100, $60. Tested, $1.50. Sel. test., $2.00. Breeders, $5.00 and $10.
Garden City Apiaries, San Jose, Calif.

FOR SALE—2-fr. nuclei 3-band Italians with queen, $2.25; 1-lb. bees with queen, $1.65. Hoffman frames wire and foundation at catalog prices. J. B. Marshall & Son,
Rosedale Apiaries, Big Bend, La.

LEATHER colored 3-band Italian bees, $1.25 per pound. Tested queens, $1.00; untested, 75c each; 2-fr. nuclei, $2.00; extra combs, 15c each. Delivery after April 15.
C. H. Cobb, Belleville, Ark.

LEATHER COLORED "Nutmeg strain of bees and queens. Tested queens April-May $2.00; after, $1.50; untested, $1.00 Return mail. A. W. Yates,
3 Chapman St., Hartford, Conn.

QUEENS—Best Italians, one for 50c; 12 for $5 50; virgins, one for 25c; 12 for $2.75. Orders taken now; filled in rotation beginning May 1. Any of my queens proving mismated, replaced free. A. F. Bray, Kelso, Tenn.

FOR SALE—The apiary of bees belonging to the late R. A. Elliston, consisting of 218 colonies, $5.00 per col., also supplies. If purchaser wishes, they can be left on present location the coming season.
Mrs. Robt. Elliston, Princeton, Ill.

TO INQUIRERS:—I sell no queens directly but have an arrangement with the Stover Apiaries, Starkville, Miss., which I keep supplied with best breeders, and they can supply you with my stock.
C. C. Miller, Marengo, Ill.

GOLDEN Italian Queens by June 1st. Untested, 75c, or six for $4.25; doz., $8.00. Select untested, $1.00. Tested, $1.25; six for $7.00. Breeders, $5.00. Pure mating guaranteed. Send for circular. J. I. Danielson,
Fairfield, Iowa.

BEES FOR SALE—A number of well established apiaries in Frio, Bexar and Atascosa, Texas, in the mesquite and guajillo belt have been listed with us for sale on their present sites. Can also furnish bees in car lots.
Southwestern Bee Co., San Antonio, Tex.

MY BRIGHT Italian queens will be ready to ship April 1 at 75c each; virgin queens, 30c each. Send for price list of queens. Bees by the pound. Safe arrival and satisfaction guaranteed. W. W. Talley,
Rt. 4, Greenville, Ala.

GOLDEN QUEENS that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00; Breeders, $5.00 and $10.00.
2Atf J. B. Brockwell, Barnetts, Va.

GOOD ITALIAN QUEENS—Tested, $1.00; untested, 75c. One-pound packages with untested queen, $2.25; 2-lb. package, $3.25. One-pound package with tested queen, $2.50; 2-lb. package, $3.50. Nuclei with untested queen, 2-frame, $3.25; 3-frame, $4.00. With tested queen, 2-frame, $3.50; 3-frame, $4.25. We can please you. G. W. Moon
1904 Park Ave., Little Rock, Ark.

FOR SALE—Nuclei and colonies of Italian bees. S. Collyer.
Box 183, 76 Broadway, Ossining, N. Y.

ITALIAN BEES (in 10-fr. hives), queens, and fancy table honey; also supplies.
Geo. F. Webster,
Valley View Farm, Sioux Falls, S. Dak.

BUSINESS FIRST — Queens, three-banded Italians. Untested, $1.00 each; 6 for $5.00. Send for descriptive price list and $10 free offer; no disease. M. F. Perry,
Bradentown, Fla.

BEES FOR SALE—1000 lbs. in 1-lb. packages at $1.00 per lb. Untested Italian queens, 70c extra, to be shipped April 1 to 20. All orders must be sent in at once.
T. W. Burlson, Waxahachie, Tex.

GOLDEN Italian queens; northern breed; new methods. Our standard, size and honey producing qualities. Write for circular and price list.
H. M. Leach & Sons, Hiram, Ohio.

GOLDEN ITALIAN Queens about May 1, that produce golden bees. Good honey gatherers. No foulbrood. Select tested, $1.25. Tested, $1.00. Untested, 75c; 6, $4.25; 12, $8.00. No nuclei or bees for sale.
D. T. Gaster, Rt. 2, Randleman, N. C.

PHELPS' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y.

GOLDEN ITALIAN queens of the quality you need. Bred strictly to produce Golden bees that get the honey. One, 75c; 6, $4.25; 12, $8.25; 50 or more, 60c each. Prompt delivery and satisfaction guaranteed.
L. J. Pfeiffer, Rt. A, Bx. 219, Los Gatos, Calif.

FOR SALE—Mott's northern bred Italian queens that resist disease well. Those that resist disease must be hardy, prolific, and hustlers; they are gentle. Bees per pound. Plans "How to Introduce Queens and Increase," 25c. List free.
E. E. Mott, Glenwood, Mich.

QUEENS, Doolittle and Moore strain, also GOLDENS that are GOLDEN. One select unt. $1.00; 6, $4.25; 12, $8.00. Tested, $1.25.
Bees by the pound a specialty. One 1-lb. package, $1.25; one 2-lb., $2.25; large lots less, also nuclei and colonies. Ready March 15th. Booking orders now. Circular free.
J. E. Wing, 155 Schiele Ave., San Jose, Calif.

I AM NOW prepared to supply you with Golden 3-banded and Carniolan queens. Give me a trial and be pleased. Tested, each, $1.00; 12 or more, 85c each. Untested, 75c each; 12 or more, 65c each. Ten percent discount on orders booked 30 days before shipment. No credit; no c. o. d. shipments.
I. N. Bankston, Eagle Ford, Tex.

GOLDEN ITALINAN QUEENS bred strictly for business, that produce a strong race of bees as honey gatherers By April 1, untested, 75c each; 6 for $4.25; 12, $8.00; 100, $60. Tested, $1.50. Safe arrival, prompt delivery and satisfaction guaranteed.
L. J. Dunn, 50 Broadway Ave., San Jose, Cal.

GOLDEN 3 BAND Italian and Carniolan queens: Virgin, one, 50c; 6, $2 50; 12, $4.00; 100, $25. Untested, one, 75c, 6, $4.20; 12, $7.80; 100, $60. Select untested, one, 85c; 6, $4.80; 12, $9.00; 100, $70. Tested, one, $1.00; 6, $5 40; 12, $10.20; 100, $80. Select tested, one, $1.25, 12, $13.80; 100, $100. Breeders, $3.00 each.
Bees in packages without combs: ½-lb., 75c; 1-lb., $1.25; 2-lb, $2.25. Nuclei, 1-frame, $1.25; 2 frames, $2 25; 3 frames, $3.00. Add price of queens wanted. We guarantee safe arrival and no disease.
C. B. Bankston, Buffalo, Tex.

GRAY CAUCASIANS, an exceptionally vigorous, prolific, long lived race. Early breeders, gentle, and best of honey gatherers. Untested queens, $1.50. Select unt., $2.00. Tested, $3.00. Select tested, $3.50. After June 20th, untested, $1.00. Select unt., $1.25. Tested, $2.00. Select tested. $2.50. Improved northern bred Italian queens as good as the best at same prices. If you desire Caucasian queens, please let me book your order early. Ask for circular. F. L. Barber, The Queen Breeder, Lowville, Lewis Co., N. Y.

SPECIAL OFFER of "The Domestic Beekeeper" six months for 25c worth of stamps Send it today. Address "The Domestic Beekeeper," Northstar, Michigan.

FOR SALE—Three-band Italian bees and queens. Three-frame nuclei with this year's rearing queen. Our bees and queens last year gave general satisfaction, and this year we are in position to give stronger nuclei with a greater percent of brood than we did last year. If it is a bargain you are looking for send your order this way. Send your orders now and money when you want them shipped. Can begin shipping April 15. Bees are all in standard hives. Hoffman frames wired and full sheets of foundation. We guarantee bees to be free from disease. The following is an extract from one of our many satisfied customers: "Today, Aug. 16, I hived the second large swarm from the colony I started from a 3-frame nucleus I bought from you in June, and have about 40 pounds of surplus honey in hive." It pays to keep well bred stock whether it is cattle or bees. Name furnished on application.
Bees without queen: Three-frame nuclei, $2.25; 2-frame nuclei, $1.75; 1-frame nuclei, $1.25. Three-lb. bees, $3.25; 2-lb. bees, $2.25; 1-lb, $1.50. 3-band Italian queen, untested, 75c. Tested, $1.00. If queen is wanted, add price of queen.
The Hyde Bee Co., Floresville, Tex.

HONEY AND BEESWAX

WANTED—Comb, extracted honey, and beeswax. R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

WANTED—Beeswax at all times in any quantity, for cash or in exchange for supplies. Dadant & Sons, Hamilton, Ill.

WANTED TO BUY a quantity of dark and amber honey for baking purposes.
A. G. Woodman Co., Grand Rapids, Mich.

WANTED—75 old combs in Hoffman frames, must be reasonably straight and free from disease. Fred Peterson, Alden, Iowa.

FOR SALE—Fine flavor coffee, 25c. One pound free with $1.00, Parcel Post. Wanted extracted honey. H. Riebeling,
1600 Spruce St., Indianapolis, Ind.

FOR SALE to the highest bidder a limited quantity of Michigan's best white extracted honey, in 60-pound tins.
A. G. Woodman, Co., Grand Rapids, Mich.

WANTED — White extracted honey also light amber in any quantity. Send sample and lowest cash price.
E. B. Rosa, Monroe, Wis.

COMB HONEY our specialty. Highest market prices obtained. Consignments of Extracted Honey also solicited.
Albert Hurt & Co., New Orleans, La.

HONEY WANTED—Extracted, white, light amber and amber of good quality. Can use several cars. Send samples and prices.
Wesley Foster, Boulder, Colo

FOR SALE—200 cases white clover comb honey. It is mostly fancy stock, and is cased in 24 section shipping cases. Interested parties address Bell E. Berryman,
Central City, Nebr.

WANTED—Extracted white clover and light amber honey. Will buy in lots of 1000 pounds to a carload. I pay cash. State what you have and send sample with lowest price. Write. M. E. Eggers, Rt. 1, Eau Claire, Wis.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered.
The Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

SPECIAL offer of "The Domestic Beekeeper" six months for 25c worth of stamps. Send it today. Address "The Domestic Beekeeper." Northstar, Michigan.

HONEY WANTED—We are in the market for white and light amber grades of honey, also off grades which are suitable for baking. If you have such honey to offer, please send us sample, state the quantity you have, how packed and your lowest price for same.
Dadant & Sons, Hamilton, Ill.

BEEKEEPER!—I guarantee to please you by furnishing you my system of queen rearing. Price $1.00. James S. Johnson,
Langnau, Laurel County, Ky.

BEGINNING with the January number the name of the Review was changed to "The Domestic Beekeeper" and greatly enlarged, there now being 48 pages and cover; the pages being an inch larger each way. Listen, we want every reader of the American Bee Journal to see what a fine monthly we are now putting out, and we are going to offer a special bargain of six months' subscription to "The Domestic Beekeeper" for the small sum of 25c. Just drop 25c worth of one or two cent stamps in a letter and write your name plainly and mail to "The Domestic Beekeeper," Northstar, Mich., and "The Domestic Beekeeper" will come to you regularly for six months.

SUPPLIES.

THE PERFECT Bee Frame Lifter. For descriptive circular address,
Ferd C. Ross, Box 194, Onawa, Iowa.

FOR SALE—260 L. frames of drawn combs, wired, hives, extractor, etc. No disease.
P. H. Dunn, Akron, Iowa.

NORTHWESTERN BEEKEEPERS! Save time and freight by ordering supplies (at catalog prices) near home. Geo. F. Webster,
Valley View Farm, Sioux Falls, S. Dak.

FOR SALE—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

WANTED—Wax and old combs for cash or to make up on shares. "Best quality" foundation made and sold cheap in small lots.
J. J. Angus, Grand Haven, Mich.

BEE-KEEPER, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
4Atf Paris, Tex.

FOR SALE—50 new 10-frame hives with metal covers complete with frames nailed and wired at $1.75 each; in lots of 25 or more at $1.50 each; also 50 10-frame supers nailed and wired; hive and supers painted two coats at 60c each; for the supers in lots of 25 or more, 50c each. M. C. Silsbee Co.,
P. O. Shocton, R.F.D. 3, Haskinsville, N. Y.

THE 25C OFFER for the "Domestic Beekeeper" six months is for *new* subscribers *only* as a trial subscription. Old subscribers willingly pay the regular price, which is a dollar a year. Send in the 25c in stamps at once before you forget it. Address "The Domestic Beekeeper" Northstar, Mich.

SITUATIONS.

WANTED—Experienced bee-man for season 1917. Roscoe F. Wixson,
Rt. 20, Dundee. N. Y.

WORK wanted in an apiary in Southwest States; some experience as beekeeper.
Mrs. O. A. Peterson, Rt. 8, Owatonna, Minn.

WANTED—Practical beeman, or one wanting to learn the business, to help to take care of bees on shares State age and terms.
Sebastian Iselin,
Care Hotel Wallstab, Sparks, Nev.

WANTED—Position in apiary. I am 22 years old; have had five years experience; have no bad habits; willing to work at truck farming or poultry when not busy with bees.
Russell Belford, Rt. 1, Golconda, Ill.

WANTED—Industrious young man, fast worker, and of clean mental and body habits, as a student helper in our large bee business for 1917 season. Will give results of long experience, and board and small wages. Give age, weight, experience, and wages in first letter.
W. A. Latshaw Co., Clarion, Mich.

WANTED

TRADE—Safety writing desk, $75 rifle for bees. A. J. Graves, Ocheyedan, Iowa.

WANTED—Bees in lots of 25 to 250 colonies within 300 miles of Detroit. Correspondence with full particulars solicited.
A. W. Smith, Birmingham, Mich.

WANTED—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses.
Dadant & Sons, Hamilton, Ill.

HONEY LABELS

HONEY LABELS of the better sort. Not only the most attractive but also the lowest in price. Send today for free samples.
Liberty Pub. Co., Sta. D, Box 4H, Cleveland, O.

MISCELLANEOUS

25 LADIES' COATS, bird dogs, wild ducks for sale or exchange for bees.
A. J. Graves, Ocheyedan, Iowa.

FOR SALE—Beagle hound pups; beauties; cheap. Leo Bentz, Rt. 4, Granton, Wis.

WANTED — Six-frame power extractor, small circular saw combination for power, four-horse gasoline engine.
W. J. Dixon, Shellmouth, Manitoba.

$80 buys my *new* $120 outfit, consisting of 28 complete 2-story 8 frame hives for extracted honey (comb also); nearly all nailed and painted two coats. With this outfit goes 40 lbs. of super and brood foundation. Will ship anywhere on receipt of price. Goods guaranteed first quality. Address.
A. N. Mestler, East Syracuse, N. Y.

QUEENS ON APPROVAL—A select tested queen on approval. Send address for description etc. Bees and supplies for sale.
A. M. Applegate, Reynoldsville, Pa.

PERFECTION Swarm Catcher; no ladder, no cutting of fruit trees. Bees take right to it; ladies can handle it. Directions with each order; shipping weight ½ pound. Price, $1.50. C. S. Keyes, Rt. 3, Salem, Oreg.

FOR SALE—Oak Ridge Apiary, consisting of 150 colonies of bees, house, barn, work shop, cement chicken house, with 5½ acres of land and bearing fruit. Situated 2½ miles from town with two, R. R., one a divison point. 20 miles from a city of 80,000 inhabitants. Address, Box A 12, R. F. D. 3, Chillicothe, Ill.

CASH paid for butterflies, insects. Some $1 to $7 each. Easy work. Even two boys earned good money with mother's help and my pictures, descriptions, price list, and simple instructions on painlessly killing, etc. Send 3c stamp at once for prospectus.
SINCLAIR, Box 244, D 41, Los Angeles, Cal.

Crop Reports and Market Conditions

Questions sent out this month were as follows:

1. What is the condition of the honey market?
2. How large have winter losses been?
3. What is the condition of honey plants compared to normal?
4. Are beekeepers making much increase?
5. Are many turning from comb to extracted?
6. What has the honey crop been, so far?

Many more reports were received than last month. A summary by subjects follows:

THE HONEY MARKET

New England reports the demand exceedingly good, with practically all holdings sold. What comb honey there is left is expected to be disposed of before the new crop comes on. In New York and other eastern states conditions are the same. Honey is all cleaned up in the south, but through the central Mississippi states comb-honey seems to be of slow sale and many beekeepers fear they will not be able to clean up all stocks before the new crop comes on. In the west conditions have improved greatly. All extracted is sold long ago, and most of the comb is out of the hands of producers. One locality in Colorado reports two cars of comb still on hand. All in all, however, the situation, even in the comb-honey line is greatly improved over a year ago. The large markets are not glutted with comb-honey as a year ago, though prices range very little if any better. Texas producers report considerable honey of the 1917 crop sold ahead (bulk comb) and at satisfactory prices. The demand for extracted is excellent everywhere. In fact, extracted honey seems to be gaining in favor with the consumers. No extracted is offered anywhere except to supply regular customers, and this at a much increased price.

LOSSES OF WINTER

Where bees have had a flight in the North and East, losses seem to be under normal. But a large part of the North has had a continuous cold, with no flight, and, though the bees went into winter in the best possible shape, there is danger of considerable losses if spring does not open soon. One report from Wisconsin of a 50 per cent loss is certainly above the average.

Conditions have materially improved in the Southeast and reports now agree that losses were small, probably less than normal. The same is true of Texas, which reports generally less loss than last year. Uvalde county seems to be the exception.

It is too early to determine the losses in the North and West, owing to excessive snows and prolonged cold. Several reporters intimate that the loss is apt to be above average.

California has suffered from unseasonable, cool weather, and there have been many cases of spring dwindling, there being two reports of whole apiaries lost from this cause. Losses have been above average, as they have in Washington and Oregon.

CONDITION OF HONEY PLANTS

In all sections north of a line passing through Central Iowa and northern Nebraska, there has been a great amount of snow, which bodes well for excellent condition of honey plants when spring opens up. This is also true of the whole west, including Colorado.

In the districts comprising Nebraska, Kansas, Missouri, Illinois, Tennessee and Kentucky, the amount of winter moisture has been small and clover has suffered as a consequence. Honey-plant conditions are not up to last year. Recent rains have made some improvement in the last two weeks.

The southeast has recovered from the early frosts previously reported and honey-plant conditions seem to be normal. A report from Florida states that the outlook is better than a year ago.

In Texas, the horsemint crop is a total failure, except in the Goliad district, where there is some chance. Mesquite is almost a month late, owing to the backward spring, but prospects for a crop are excellent, as it requires dry weather. The Guajilla prospects in the Uvalde district, seem to be poor. Crop prospects for the state should be probably 85 per cent of normal.

In California, recent rains have bettered the prospect, which is now about 80 per cent of normal. A late spring has retarded growth. All sections must have more rain to secure a good crop. Oranges will soon be in bloom.

INCREASE

There will be no general phenomenal increase by veteran beekeepers in any locality, although some are increasing as fast as they can equip to handle more bees. Beginners are increasing their holdings, generally, in the Middle West.

EXTRACTED TO COMB

There is a general tendency toward the production of extracted honey to supply the increased demand. One very prominent Wisconsin beekeeper is discontinuing comb honey for extracted, as is one in Illinois. The change throughout the country should be large enough to be noticeable.

HONEY CROP

The season is late in both California and Texas, and no honey has as yet been harvested. One reporter in Florida states that his earliest crop is coming in and that it will be 25 per cent better than in 1916.

In Texas, where bulk-comb honey is produced almost exclusively, producers are aiming to get a better price than in 1916, when practically all stocks were sold by December 15.

FOREHAND'S QUEENS

15 LBS. SURPLUS — *Which Colony is Yours, Mr. Beekeeper?* — 150 LBS. SURPLUS

How many of you were disappointed last season when you harvested your honey crop? You can make every colony a good one. WHY NOT? Just head it with a young vigorous three-banded Italian queen. She will cost you only 75 cents, just three pounds of honey. You can easily make a gain of sixty pounds over the inferior colony, which is a net gain of $3.75. Good pay for introducing one queen, not considering the increased value of the colony. Spring will soon be here, the time to requeen that colony that has the bad queen. Can you spend your time more profitably now than deciding what stock and where to purchase your early queens? Give us a trial. We breed only the pure three-band queens. All our yards are pure, so you take no risk in getting a hybrid. Four reasons why you should use our queens: 1st. They are first-class honey gatherers. 2d. They are vigorous and highly resistant to foulbrood. 3d. The imported bees (which ours are reared from) are among the gentlest bees known. 4th. The most modern and learned bee-men in the world today use the three-band. WHY? Because they are the best.

We have had over 25 years' experience in rearing queens; having started with Doolittle and such men. We have 1000 nuclei, which makes it possible to fill orders promptly. Three expert queen-breeders have charge of these nuclei; so we do not over-work, which gives us ample time to improve our stock. None but first-class queens are mailed. We give a first-class queen at a medium price, and we guarantee perfect satisfaction and safe delivery.

	1	6	12		1	6	12
Untested.....	$ .75	$ 4 25	$ 8.00	Tested.....	$1.50	$ 8 75	$17.00
Select untested.....	1.00	4.75	9.00	Select tested.....	2.00	11.00	20.00

Write for circular giving general description. Mail all orders to

W. J. FOREHAND & SONS, Ft. Deposit, Ala.

GOOD USED PIANOS AT CLEARING SALE PRICES SOLD UNDER WARRANTY AND SHIPPED ON APPROVAL AT OUR RISK FOR ALL FREIGHTS AND HANDLING CHARGES

George W. Lyons Studio, small size; $75.
Ernest Gabler & Bro., upright, rosewood, medium size, excellent tone; $85.
Pease Piano Co., upright, rosewood; $100.
Smith & Barnes, upright, mahogany; $115.
Mason & Hamlin, upright, ebonized, dull finish; $125.
Sheraton upright, mahogany, nearly new; $135.
Empire Piano Co., upright, mahogany, superior tone; $150.
Fischer upright, golden oak, fine condition; $175.
Fischer upright, mahogany, like new; $200.
Story & Clark, upright, elaborate style, mahogany; $225.
Knabe, upright, mahogany, perfect condition; $250.
Behr Bros., upright, mahogany, slightly used; $275.
Knabe, upright, mahogany, Colonial style; $300.
Steinway, upright, mahogany; $350.

Cash prices; but easy payment terms at 6 percent interest if desired.

For further information write World's Largest Music House.

LYON & HEALY, CHICAGO, ILLINOIS

Sweet Clover Seed

FOR WASTE PLACES

We have a few hundred pounds of Sweet Clover Seed that has a few too many weed seeds in it for sowing on cultivated land. This seed would do, however, for sowing in waste places or on poor soil that is not fit for cultivation. We can supply this seed as follows: Ten pound lots or more, 10c per pound.

Postage extra.

DADANT & SONS
Hamilton, Illinois

Gray Caucasians

Early breeders; great honey gatherers; cap beautifully white, great comb builders; very prolific; gentle; hardy; good winterers. Untested, $1.00. Select untested, $1.25. Tested, $1.50. Select Tested, $2.00. The best all-purpose bee.

H. W. FULMER, Box 10, Andalusia, Pa.

EVERY BEEKEEPER KNOWS

The worth of a *good* queen, the worth of a *good* strain of bees- and also knows how *worthless* is a poor queen and inferior bees. Try our strain of three-band Italians; they will not disappoint you. Vigorous, prolific queens; bees that get the honey. *Another* thing, no *disease* in this locality. Tested queens of last fall rearing by return mail. $1.00 each. Untested queens, single queen, $1.00; $9.00 per dozen.

J. W. K. SHAW & CO.
Loreauville, Louisiana

The Double-Walled Massie Bee-Hive

Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate

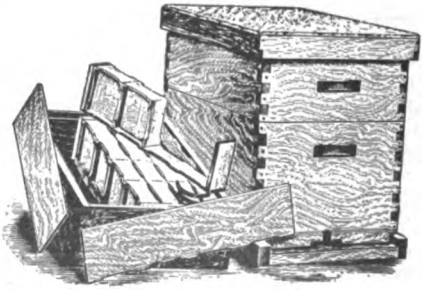
Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracting Frames made from White Pine

VENTILATED BOTTOM

THE MASSIE HIVE
For Comb or Extracted Honey

Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee-supply business has shown us that the **Massie is the very best hive,** and testimonials to this effect are received daily from those who are using this hive.



The Dovetailed Hive for Comb Honey

Why Not Give Us a Trial Order? **Satisfaction Fully Guaranteed**

We are also extensive manufacturers of **Dovetailed Hives and all other Apiarian Supplies.** If you are in the market for supplies be sure to get our prices before buying elsewhere. We will mail our large illustrated catalog and **special price list** to any one upon request

KRETCHMER MFG. COMPANY, 110 3d St. Council Bluffs, Iowa

NOTICE TO BEEKEEPERS!

We are now booking orders for our 3-banded Italian queens and combless packages, and will furnish them during April, May and June at the following prices:

Prices of Combless Packages Without Queens*

Size 1-lb. each	$1.35
" 2-lb. "	2.35
" 3-lb. "	3.35

Three-Banded Italian Queens for April, May and June

Untested, each	$ 1.00	Tested each	$ 1.50
" 6	4.50	" 6	8.00
" 12	8.00	" 12	15.00
" 100	65.00	" 100	100.00

Select tested, $2.00; breeders, $3.00

* In lots of over one dozen packages get our prices. If queens are wanted, add wholesale price and state kind.

We have just invented a new style cage for shipping bees, for which patent has been applied. This cage allows the queen to lay while on the trip, which gives the purchaser from three to seven days advantage of the old style cage. It is almost equal to a colony of bees. With every order for 100 pounds of bees we will give one of these packages with a tested queen free. We only have one dozen of these cages, and will not put them on the market till 1918, as our stock of cages was made up before we evolved the new cage.

Our Mr. A. B. Marchant has retired from the production of honey and will manage our yards for the package and queen trade. Therefore, we will be in a better position to fill all orders with dispatch. Having doubled our capacity we believe we can fill all orders, the day they are due. We have introduced new blood in all our yards, and we have a strain of bees second to none. Our packages are shipped the same day they are caged. Our bees for our packages are all reared above an excluder; therefore, we ship nothing but young bees, as young bees stand the trip better than older ones. We guarantee freedom from all diseases and safe arrival in the United States and Canada. Place your orders early, as first comes first served Write for prices on large orders.

MARCHANT BROS., Union Springs, Ala.

BEESWAX WANTED

You will save money and freight on your 1917 foundation by shipping us your beeswax and paying only for its manufacture into **"SUPERIOR FOUNDATION."** (Weed process.)

OLD COMBS AND SLUMGUM

Send them along; for the lowest freight rate bill as "beeswax refuse." Our steam process removes every ounce of wax. We render on shares.

SUPERIOR HONEY COMPANY, OGDEN, UTAH

TYPEWRITER SENSATION

$2.50 a Month Buys Visible Writing L. C. Smith

Perfect machines only of standard size with keyboard of standard universal arrangement—has Backspacer—Tabulator—two color ribbon—Ball Bearing construction—every operating convenience. **Five Days' Free Trial.** Fully guaranteed. Catalog and special price free.
H. A. SMITH, 314—231 North Fifth Avenue, Chicago, Illinois

BEE-SUPPLIES

Let Us Figure With You

We know we can satisfy you on price and quality. Write for catalog.

C. C. Clemons Bee-Supply Co.
Dept. S., Kansas City, Missouri

FOR SALE 10,000 POUNDS OF BEES SPRING DELIVERY

20 Years of Select Breeding Gives Us Bees of Highest Quality

BEES FOR HONEY PRODUCTION—BEES OF UNUSUAL VITALITY

M. C. BERRY & CO., Hayneville, Ala.

Gentlemen:—Will want more of your three-pound packages of bees with queens the coming spring. The two I bought of you last May did all right. One package made 185 sections of honey and gave one swarm, and the other made 296 sections and gave two swarms. I am well pleased. MELVIN WYSONG, KIMMELL, IND.

SWARMS OF BEES BY THE POUND WITHOUT QUEENS READY APRIL 1

1-lb. pkgs. $1.25 each; 25 to 50 pkgs. $1.22½ each; 50 to 100 pkgs. $1.20 each; 2-lb. pkgs. $2.25 each; 25 to 50 pkgs. $2.22½ each; 50 to 100 and up, $2.20 each; 3-lb. pkgs. $3.25 each; 25 to 50 pkgs. $3.22½ each; 50 to 100 and up, $3.20 each.

GOLDEN AND 3-BAND ITALIAN QUEENS READY APRIL 1

Untested.....75 cts. each; $65.00 per 100	Tested.....$1.25 each; $110.00 per 100
Select untested.....00 cts. " ; $75.00 " 100	Select tested 1.50 " 125.00 " 100

Write for descriptive price list. Let us book your order now. Only a small deposit required.

LARGEST AND MOST SUCCESSFUL SHIPPERS OF BEES IN PACKAGES

M. C. BERRY & COMPANY, Hayneville, Alabama, U. S. A.

ADVANCE IN PRICE

Of all metal goods including Honey Extractors, Honey Tanks, Capping Melters, Wax Presses, Honey-Knives, Boilers, Stoves, Excluders and Honey-boards, Sheet Zinc, Strainer Pails, Cans and Pails, Glassware, Etc.

Only 30 Days Left

In which to buy the above supplies at present prices. On account of the great advance in price of all raw metals, we will be forced to raise our prices on the above items 10 percent or more. If you get your orders in immediately, you will protect yourself against this advance in price. Revised prices effective May 1st.

Comb foundation has already advanced 5c per pound. If you have any Beeswax to sell for cash or trade for supplies, write us at once. We will pay highest prices for wax delivered to any of our branches.

THE A. I. ROOT COMPANY

MEDINA, OHIO

NEW YORK
CHICAGO
PHILADELPHIA
DES MOINES
ST PAUL
LOS ANGELES
SAN FRANCISCO
INDIANAPOLIS
SYRACUSE
WASHINGTON

MARSHFIELD GOODS

BEEKEEPERS :—

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality ; best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section-holders** and **shipping cases.**

Our catalog is free for the asking.

MARSHFIELD MFG. COMPANY, Marshfield, Wi consin

EARLY ORDER DISCOUNTS WILL

Pay You to Buy Bee-Supplies Now

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.

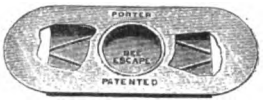
DON'T WAIT TILL SPRING

Before having your beeswax made into foundation or to buy supplies. Prices were never more unsettled. Better take advantage of present low prices and early order discounts, by ordering now.

Write for prices and discounts.

GUS DITTMER COMPANY
Augusta, Wisconsin

PORTER BEE ESCAPE SAVES HONEY TIME MONEY



For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Illinois, U. S. A.
Please mention Am. Bee Journal when writing.

FREEMAN'S FARMER North Yakima, Wash.

Successor to Northwest Farm and Home
60 YEARS OLD

If you want a descriptive and agricultural magazine, it will inform you all about the methods in the Pacific Northwest. Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

THREE-BANDED ITALIANS

Will be ready by April 1, to begin mailing untested queens of my exceptionally vigorous strain of Italian bees. They are gentle, prolific, and the best of honey gatherers. Give them a trial and I am sure you will be a regular customer hereafter. Will book orders now. Circular free. Safe arrival guaranteed in the United States and Canada. Untested, $1.00; 6, $5.00; 12, $9 00. Tested $1.25; 6, $6.50; 12, $12.50.

JOHN G. MILLER
723 C St., Corpus Christi, Texas

NOW IS THE TIME

Prepare Now for Next Season

Do not wait until your bees are out of winter quarters to order your goods.

PROSPECTS FOR 1917

Are for another big one. Lotz Sections are the best; they are perfect in workmanship, quality and material. All guaranteed. We want you on our mailing list.

Send for 1917 Catalog

AUGUST LOTZ COMPANY
Boyd, Wisconsin

ESTABLISHED 1885

We are still furnishing bee-hives made of white pine lumber; they are well made and will last. Our large catalog, giving full particulars about all bee supplies is free for the asking. Beeswax taken in exchange for supplies or cash.

J. NEBEL & SON SUPPLY COMPANY
High Hill, Montg. Co., Missouri

LEATHER COLORED ITALIANS

About April 1st I will again be ready to mail untested queens of my fine strain of Italians. I breed no other race. Choice tested and breeding queens at all times. Insure against a possible disappointment by ordering early. Satisfaction guaranteed. Circular free. Untested queens $1 00 each; doz. $9.00. Choice tested, $1.50 each. Breeder, $3.00 to $5.00 each.

C. S. ENGLE, Beeville, Bee Co., Texas

"Signed Lumber is Safe Lumber."

It's a pretty good idea (now that the lumber mills in the Southern Cypress Mfrs. Assn. are IDENTIFYING EVERY CYPRESS BOARD THEY SAW) to MENTION TO YOUR LUMBER DEALER, CONTRACTOR or CARPENTER — and to ASK YOUR ARCHITECT to SPECIFY — that YOUR CYPRESS MUST BE

"TIDEWATER" CYPRESS IDENTIFIED BY THIS TRADE-MARK
Stamped in the End of Every Piece or APPLIED TO EVERY BUNDLE

S C M A No. of Mill

TRADE MARK REG. U.S. PAT. OFFICE

When a manufacturer places his imprint indelibly upon his product it evidences to the consumer two factors of value which, together, are the sum total of all any buyer wants; these factors are integrity of purpose and complete responsibility on the part of the maker of the desired commodity.

The above legally registered "Tidewater Cypress" trade-mark is now *YOUR INSURANCE POLICY of LUMBER QUALITY.*

It appears stamped mechanically into the end of EVERY board and timber of

CYPRESS "THE WOOD ETERNAL."

Thoroughly dependable Cypress Flooring, Siding, Moulding and Shingles, etc., which come in bundles, bear the same mark on EVERY BUNDLE.

The legal right to apply this epoch-making symbol of STRICT RESPONSIBILITY IN LUMBER MAKING AND SELLING is restricted to those Cypress mills which, by their membership in the Southern Cypress Manufacturers' Association, attest their devotion to its Principles of SERVICE to the CONSUMER. Only mills cutting "Tidewater" Cypress are eligible for membership. (Cypress which grows too far inland is not equally noted for the "Eternal," or decay-resisting, quality.) Only mills which subscribe to the Association's standard of scrupulous care in Methods of MANUFACTURE, INTEGRITY OF GRADING and ACCURACY OF COUNT can belong to the Association. These responsible mills the Association now licenses to CERTIFY THEIR CYPRESS by applying the registered trade-mark with their identifying number inserted.

S C M A No. of Mill

TRADE MARK REG. U.S. PAT. OFFICE

BY THIS MARK YOU KNOW THAT IT'S CYPRESS, "THE WOOD ETERNAL," AND WORTHY OF YOUR FAITH. IT IS WELL TO INSIST ON SEEING THIS TRADE-MARK ON EVERY BOARD OFFERED AS "CYPRESS."

S C M A No. of Mill

TRADE MARK REG. U.S. PAT. OFFICE

Let our ALL-ROUND HELPS DEPARTMENT help YOU *MORE.* Our entire resources are at your service with Reliable Counsel.

Southern Cypress Manufacturers' Association

1251 HIBERNIA BANK BLDG., NEW ORLEANS, LA., or 1251 HEARD NATIONAL BANK BLDG., JACKSONVILLE, FLA.

INSIST ON TRADE-MARKED CYPRESS AT YOUR LOCAL LUMBER DEALER'S. IF HE HASN'T IT, *LET US KNOW.*

AMERICAN BEE JOURNAL

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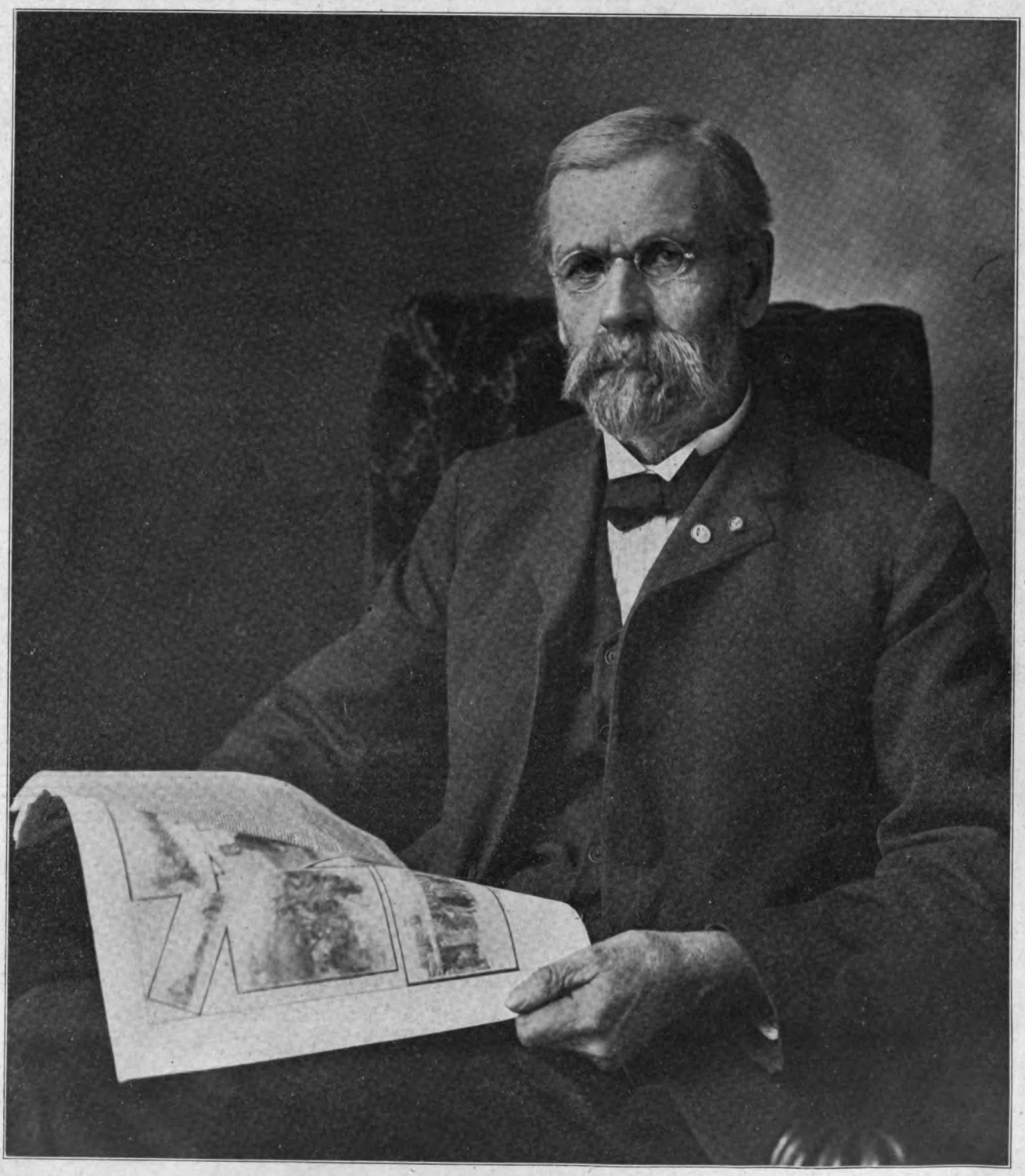
VESOTA
Agriculture

MAY, 1917



Hon. Eugene Secor, the Poet of American Beekeeping

ARCHDEKIN'S FINE ITALIAN QUEENS AND COMBLESS BEES

April, May, June queens warranted purely mated, $1.00 each; six for $5.00; per doz., $9.00. Bees per lb. $1.25. With untested queen, $2.00 per lb. I have originated a pkg. light but strong; saves you bees and express. My guarantee is prompt shipment, safe arrival, perfect satisfaction. No disease. Small deposit books your order.

J. F. Archdekin Bordelonville, La.

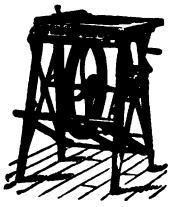
WESTERN BEEKEEPERS!

We handle the finest line of Bee Supplies. Send for our 68 page catalog. Our prices will interest you.

The Colorado Honey-Producers' Association

1424 Market Street, Denver, Colo.

BARNES' Foot-Power Machinery



Read what J. I. Parent of Chariton, N. Y., says: "We cut with one of your Combined Machines last winter 50 chaff hives with 7-in. cap, 100 honey-racks, 500 frames, and a great deal of other work. This winter we have a double amount of hives, etc., to make with this saw. It will do all you say of it." Catalog & price-list free

W. F. & JOHN BARNES

995 Ruby St., ROCKFORD, ILLINOIS.

BUY

THE FAMOUS DAVIS GOLDENS

And get big yields from gentle bees. Write for circular and Price list.

BEN G. DAVIS

Spring Hill, Tennessee

POULTRY, FRUIT, BEE PAPER COMBINATION $1.50

Poultry and Fruit are allied pursuits for the beekeeper. Here is a special combination of three papers which gives excellent reading at a low cost:

The Fruit Grower	.50
American Poultry Advocate	.50
American Bee Journal	$1.00

Our price for all three for one year is only $1.50. Or if you want two poultry papers, add 25c to the above offer and get your choice of the following one year:

Reliable Poultry Journal, Poultry Success, American Poultry World, Big Four Poultry Journal, Poultry Tribune, Poultry Item.

Send all orders to

AMERICAN BEE JOURNAL, Hamilton, Ill.

BEES AND QUEENS, GOLDENS AND LEATHER COLORED FOR 1917

Canadian and United States Trade

We are now booking deliveries in June and July at the following prices, viz.:

FROM PENN, MISS.	1	6	12	25 to 100
Prices 1 and over				
Untested	$ .85	$4.50	$8.00	$ .65 each
Warranted	1.10	5.00	9.50	.75 "
Tested	1.50	7.50	13.50	1.05 "
Breeders	3.00 to $10.00 each.			

FROM TORONTO, ONTARIO.	1	6	12	25 to 100
	$1.00	$4.80	$ 9.25	$ .75 each
	1.45	5.80	10.75	.85 "
	1.75	7.80	14.75	1.15 "
	3.00 to $10.00 each.			

POUND PACKAGES WITH UNTESTED QUEENS

FROM PENN, MISS.	1 to 5 each	6 to 25 each	over each
1-pound and Queen	$2.25	$2.00	$1.90
2-pound and Queen	3.00	2.75	2.65

FROM TORONTO, ONTARIO	1 to 5 each	6 to 25 each	50 over each
	$3.00	$2.75	$2.65
	4.50	4.25	4.00

Prices on full colonies and nuclei quoted on request.

We supply THE ROOT CANADIAN HOUSE, 54 WOLSELEY ST., TORONTO, ONTARIO, CANADA, with large shipments almost daily during the above months, frequently moving almost a car of packages to them at a time. This is the most successful way of serving Canadian trade. This firm has our entire Agency for the Dominion, and all Canadian business should be addressed to them unless you wish shipments made direct from Penn, Miss., address us.

At the time of booking order, remit 10 percent as a form of good faith on your part with balance to be remitted a few days prior to date of shipment. We move orders promptly. Our references, any Mercantile Agency, The A. I. Root Co., or American Bee Journal.

When you deal with us it means satisfaction. Health Certificates furnished with each and every shipment of bees. This assures you that no delays will take place. Safe delivery guaranteed. If interested in bee-hive material, our catalog will be sent on request.

THE PENN COMPANY, PENN, MISS., U. S. A.

Bee Supply Department

Orders shipped day received

Our warerooms are loaded with Lewis Beeware

Everything at factory prices

Send for catalog

Wax Rendering Department

We do perfect wax rendering. It will pay every Beekeeper to gather up all his old combs and cappings and ship to us. We charge 5c a pound for the wax we render and pay the highest cash or trade price.

THE FRED W. MUTH COMPANY

(The firm the Busy Bees work for)

204 Walnut Street, - - CINCINNATI OHIO

BEESWAX WANTED

You will save money and freight on your 1917 foundation by shipping us your beeswax and paying only for its manufacture into **"SUPERIOR FOUNDATION."** (Weed process.)

OLD COMBS AND SLUMGUM

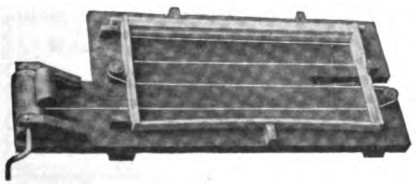
Send them along; for the lowest freight rate bill as "beeswax refuse." Our steam process removes every ounce of wax. We render on shares.

SUPERIOR HONEY COMPANY, OGDEN, UTAH

Poultry Supplies

Poultry supplies of all kinds, best automatic grain feeders, fountains, feed troughs, dry mash hoppers, bone mills, exhibition and shipping coops, leg bands, shell, grit, bone, meat, foods, and remedies ANYTHING YOU WANT. Also Pigeon, Kennel and Bee Supplies. Circular free.

Eureka Supply House
Box B-403, - Aurora, Illinois



PATENTED
WRIGHT'S FRAME-WIRING DEVICE

Most rapid in use. Saves cost of machine in one day. Tighter wires, no kinks, no sore hands. Price, $2.50, postpaid in U. S. A.
G. W. Wright Company, Azusa, Calif.

Why Not Get What You Want, And When You Want It?

The Atchley Queens and Bees need no recommendation to the beekeeping world. They have been buying them for FORTY YEARS, AND ARE STILL DOING IT.
BOOK YOUR ORDERS NOW!

One-pound package, $1.40 each; 25 for $32.50; 100 for $125. Two-pound packages; $2.25 each; 25 for $52.50; 100 for $210. Two-frame nuclei, $2.30 each; three-frame, $3.25 each. No queens. Untested queens, Italian or Carniolan, $1.00 each, or $10 per dozen; 100 for $70. A big lot of fine tested queens cheap. Write for prices. Prices on beesand queens in large lots quoted on application.
WM. ATCHLEY, Mathis, Texas
The Texas Bee and Honey Man

FILMS DEVELOPED

All roll films developed for 10 cents. We return them the same day. Everything in the KODAK Line. Send for catalog.
F. M. ALEXANDER
Atlantic, Iowa

CAUCASIANS

I am the Pioneer Breeder of pure Grey Caucasian bees. Queens, nuclei, and pound packages.
A. D. D. WOOD
Box 61, Lansing, Michigan

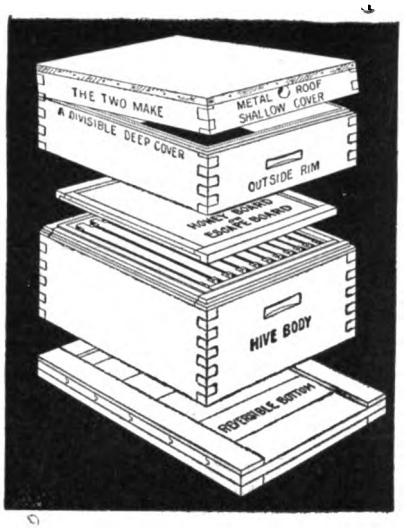
PROTECTION HIVES

Double Wall

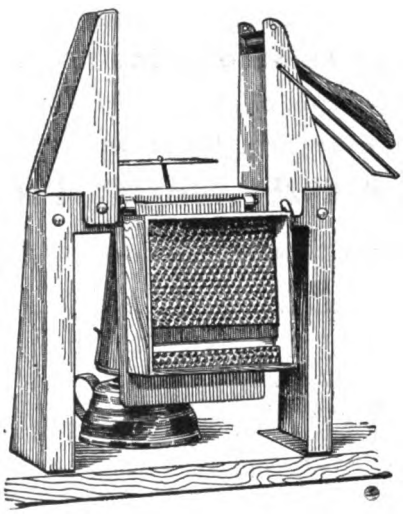
Price of five hives with outside rims, $13.75; without rims, $12.00 f. o. b. Grand Rapids, Mich Delivered to any station in the U. S. A. east of the Mississippi and north of the Ohio Rivers with outside rims, $15.00.

They are double wall with air spaces or packing as you may prefer. A large percentage of our customers use them with air spaces and no packing. Packed hives will not last as long as those that are not, as packing has a tendency to absorb moisture. They have ⅞ material in the outer wall, which makes them substantial. The inner walls are of ⅜ material.

If you have ever had occasion to spend any time in a building single boarded during cold weather you can appreciate the importance of double walls. Great quantities of fuel are required to keep the stove red hot, while you roast on one side and freeze on the other. Double walls in hives are equally as important. Send for catalog and special circulars, showing large illustrations.



A. G. WOODMAN CO., Grand Rapids, Michigan



SECTION FIXER

A combined section press and foundation fastener of pressed steel construction. It folds the section and puts in top and bottom starters all at one handling, thus saving a great amount of labor. With the top and bottom starters the comb is firmly attached to all four sides, a requirement to grade fancy. Increase the value of your crop by this method.

The sale of Section Fixers has had a great increase this year. This is conclusive proof that they are giving universal satisfaction. They are the finest thing on the market for the purpose, and have given the greatest of satisfaction in every case when properly operated. We have hundreds of testimonials on file.

A. G. WOODMAN CO.,

Grand Rapids, Michigan

TIN HONEY PACKAGES

Do not wait longer, but secure your honey packages at once. The tin plate situation is becoming more serious from day to day. Freight traffic is slow and uncertain. We placed our order for tin plate for our 1918 Bee Smoker Trade some time before a state of war was declared. We dared not wait longer, for fear we could not secure it at all. Our three year contract on tin honey packages is still being honored, and runs until Jan. 1, 1919. We are saving money for carload buyers and others of smaller lots. Send us a list of your requirements. Do not delay. Act at once.

60-pound cans, one and two in a case

Friction Top Tins

	2 lb. Cans.	2½ lb. Cans.	3 lb. Cans.	5 lb. Pails.	10 lb. Pails
Cases holding	24	24	....	12	6
Crates holding	....	....	....	50	50
Crates holding	100	....	100	100	100
Crates holding	603	450	....	203	113

A. G. Woodman Co., Grand Rapids, Mich.

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J. W. ROUSE, Mexico, Missouri

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by the pound. Nuclei QUEENS. 1917 prices on request. Write.
J. B. HOLLOPETER, Rockton, Pa.

ENERGETIC
HONEY GATHERERS
Best 3-Banded Stock

Untested queen, 75c. Bees per lb., $1.25. In quantity price quoted on application. Prompt shipment. Safe arrival and satisfaction guaranteed. No disease. Shipments ready May 15.
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SAFE ARRIVAL GUARANTEED

We are doing business under the above conditions. All orders received by us will have our immediate attention. Our STOCK HAS NO EQUAL. NEVER before have we been in the position to take care of our orders as WE are now. We have enlarged our **queen-rearing and pound package business.**

Remember all orders accepted by us will be filled by return mail or express if WANTED. If WE can't do it, WE will refund your money at once. You will be perfectly safe by placing your order with us for PROMPT DELIVERY. We quote prices as following:

	1	6	12
Untested	$1.50	$ 7.50	$12 00
Tested	2.00	10.50	18.00
Select tested	3.00	15.00	24.00
Select breeder, $5.00. Extra select breeder, $10			

Bees by the Pound Without Queens

	1	6	12
1-pound bees	$1.50	$ 8.00	$15.00
2-pound bees	2.50	14.00	27.00
3-pound bees	3.25	18.50	35.00

Prices of Nuclei Without Queens

	1	6	12
1-frame	$2.00	$10.50	$18.00
2-frame	2.50	12.00	22.00
3-frame	3.50	20.00	37.00
5-frame	5.00	23.00	44.00

Our mail and express service is the best, 24 outgoing trains daily. WE guarantee all queens to be purely mated. All bees free from any disease. Place your order with us and get **Quality, Service and System.**

J. E. MARCHANT BEE & HONEY COMPANY, Columbus, Georgia, U. S. A.

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The quality of Murry's queens and bees is shown in the increasing demand for them. Capacity of queen yards doubled last year and again this season. Advance orders up to March 5th nearly equal to total sales last season. Why? Because they get a square deal.

Three-banded Italians and Golden Italians. Orders filled by return mail. Safe arrival and satisfaction guarranteed. No disease. Health certificate with each shipment of bees or queens.

Queens	1	6	12	1	6	12	100
Prices	March 15th to May 1st			May 1st to Nov. 15th			
Untested	$1.00	$ 5.50	$10.00	$ .75	$4 00	$ 7.50	$60.00
Tested	1.25	6.50	12.00	1.00	5.50	10.00	
Select tested	2.00	10.00	18.00	1.50	8.00	15.00	
Breeders	5.00 to $10.00 each, any time.						

For nuclei and pound packages, see March issue of this Journal, or write for circular.

H. D. MURRY, MATHIS, TEXAS

Queens and Bees from the Cotton Belt Apiaries

Three-banded Italians only. We are now booking orders for May, and June deliveries at the following prices, viz:

PRICES FOR ONE OR MORE

	1	6	12
Untested	$ .75	$4.00	$ 7.50
Tested	1.00	5.70	10.75
Breeders	3.00 to $10.00 each.		
Virgins	3 for $1.00.		

	1	10
1-pound package, wire cage, without queen	$1.50	$1.25
2-pound package, wire cage, without queen	2.25	2.00

1-frame nuclei without queen, $1.50; 2-frame nuclei without queen, $2.75; 3-frame nuclei without queen, $3.50.

When queens are wanted with nuclei or packages add queens at prices quoted above Write for discount on larger quantities booked early.

We guarantee safe delivery of bees and queens, and reasonable satisfaction. Twenty years experience. No disease. Health certificate with every shipment. Write for testimonials and references if desired.

To avoid disappointment in the spring be sure and place your order NOW.

The COTTON BELT APIARIES, Box 83, Roxton, Tex

DOOLITTLE & CLARK

Have some fine Breeding Queens now ready for delivery. $2.50, $5.00 and $10. Untested, $1.00 each. $9.00 a dozen.

Marietta, Onondaga Co., N. Y.

ITALIAN QUEENS AND BEES

I am better able to supply the trade with my Three-band Italian Queens, Colonies and Nuclei than ever before. Send for circular and prices.

E. A. Leffingwell, Allen, Michigan

QUINN'S QUEENS OF QUALITY

ARE PEERLESS—"THERE'S A REASON"

They are thoroughbred, pedigreed, three-banded Italians and Grey Caucasians. "Mendelian" bred; good qualities are accentuated. Special drones from superior mothers—results are obvious.

PRICES—Untested, May and June, $1.50 each. After June 30, $1.00 each. Tested queens of each race, $2.00 each.

For Italians, address Ft. Myers, Fla.; for Caucasians, address Houston Heights, Tex.

CHARLES W. QUINN

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OHIO **KENTUCKY** **TENNESSEE**

We carry a large and complete stock of bee supplies, and are prepared to give you prompt service. We have just received several carloads of new fresh supplies. Send for our catalog.

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Tennessee-Bred Queens

45 Years' Experience in Queen-Rearing

Breed 3-Band Italians Only

	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested.....	$1.50	$ 7.50	$13 50	$1.25	$ 6.50	$11.50	$1.00	$ 5.00	9.00	$ .75	$ 4.00	$ .75
Select Untested..	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00	1.00	5.00	9.00
Tested.....	2.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00	1.50	8.00	15.00
Select Tested....	3.00	16.50	30 00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	10.00	18.00

Nuclei (no queen) 1 fr., $1.50; 2 fr., $2.15; 3 fr., $2.75; 4 fr., $3.50; pure 3-band Italians. Select queen wanted, add price.

Capacity of yard, 5000 queens a year

Select queen tested for breeding, $5.00

The very best queen tested for breeding, $10.00

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BECAUSE the material which goes into a LEWIS SECTION is of the right kind, especially selected for the purpose. The stock is sorted and resorted—the discolored stock thrown out, leaving only the whitest material to go into LEWIS SECTIONS.

BECAUSE the V groove, which is the most important process in the manufacture of a section is made just right. In the LEWIS SECTION it is cut just deep enough so that the section will not break in folding. The LEWIS SECTION expert has been supervising the manufacture of LEWIS SECTIONS for over thirty years.

BECAUSE the finishing of the section is given the utmost care. The LEWIS SECTIONS is polished on both sides in a double surfacing sanding machine designed in the Lewis plant especially for this purpose. It insures the uniform thickness of each and every section. The dovetailing of the ends is smooth, clean and just right.

BECAUSE even after the LEWIS SECTIONS are completely manufactured, the packing is considered a very important part of the marketing. All LEWIS SECTIONS are put up in regular standard packages containing a good full count. A tight wooden box is used, entirely enclosing the contents so that no discoloration from air can occur, no matter how long the sections are carried in stock. The package is also strongly braced at all corners, insuring delivery in good order.

At the same price you pay for other standard makes of sections you get all of the above when you buy Lewis Sections

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WHERE YOU BUY YOUR
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WATERTOWN WIS. U.S.A.
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AMERICAN BEE JOURNAL

Vol. LVII.—No. 5 HAMILTON, ILL., MAY, 1917, MONTHLY, $1.00 A YEAR

SEVENTY YEARS OF BEEKEEPING

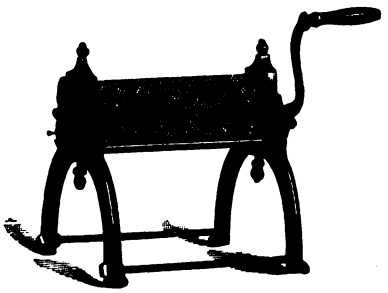
The Fourth of a Series of Articles By the Editor, Reviewing the Development of Beekeeping Since 1845

WE have already mentioned, in our second number of these reminiscences, that in 1867 suggestions were made for the use of artificial foundation for combs. The original idea of comb foundation dated back to 1857, when Mehring, a German, manufactured "wax wafers" cast in a mold, with the imprint of the cell base upon them. A Swiss, Peter Jacob, in 1865 manufactured a similar article. These were very crude products.

In his "Beekeepers' Guide," already mentioned, Mr. Kretchmer explained how, as early as 1843, his father devised a comb guide, made by dipping a narrow strip of linen in wax and starch, upon which the base of the cells was impressed, by passing it through a pair of engraved rollers. So his father would appear to have been even ahead of Mehring in the idea of comb foundation.

In 1861 Mr. Wagner secured a patent upon "artificial honey-comb foundation by whatever process made." In 1876, C. O. Perrine, a honey dealer of Chicago, bought the patent, which had never been put to use. Frederick Weiss, of New York, manufactured a few hundred pounds of printed wax in 1875. A. I. Root secured a pair of cylinders, made under his direction by a skilled workman, Washburne, but when Perrine claimed the ownership of the patent Root sold him his machine. However, shortly afterwards, Root and others concluded that the patent was worthless and the manufacture of foundation began, with different mills and dies. On the whole, A. I. Root is to be credited with the popularizing of the process. As with the movable frame hive, the time had evidently come for this.

To show how clumsy were the first attempts at making comb foundation, we will quote what A. I. Root wrote in "Gleanings," February, 1876, page 29: "We have at present none for sale, except some that we purchased of Mr. Long (Weiss' agent in N. Y.) The thinnest measures 5 1-3 square feet to the pound and the thickest about three square feet." For some years very little was made as thin as 8 square feet to the pound, and the complaint of "fishbone" in comb honey became an objection to its use. Other objections were raised. It was



THE VANDERVORT FOUNDATION MILL
(From an old wood cut)

said to sag in the frames. Bingham, at the Michigan convention of April, 1878, strongly opposed the use of it, contending that natural comb gave the honey a good flavor which comb foundation did not impart. But the great majority were enthused over its use, since it saved the bees the trouble of making so much comb, the cost of which was, and is still, estimated variously at from 8 to 20 pounds of honey, or more, for each pound of comb. It also secures absolutely straight combs, all worker combs, a very uncommon occurrence formerly in any apiary, notwithstanding all the attention given by the careful apiarist to this requirement.

The Dunham machine, the Pelham mill, the Given press and later the Vandervort mills making foundation of different weights, up to 14 square feet to the pound, competed with the Root cylinders. But the press, as well as the plaster casts made in imitation of the European "gaufriers," lasted but a short time, the foundation made from these instruments being very inferior in quality and of heavy weight, besides being brittle and unfit for shipment. Yet many Europeans still confine themselves to the use of the metal "gaufrier" or of a plaster cast, for private use. Its inefficiency is plain when we read of apiarists well pleased with their own make, of a weight of 100 to 110 decimeters to the kilo (4.88 to 5.37 square feet per pound;) while on the cylinders it is readily made of more than twice as many feet, doing away with "fishbone" entirely.

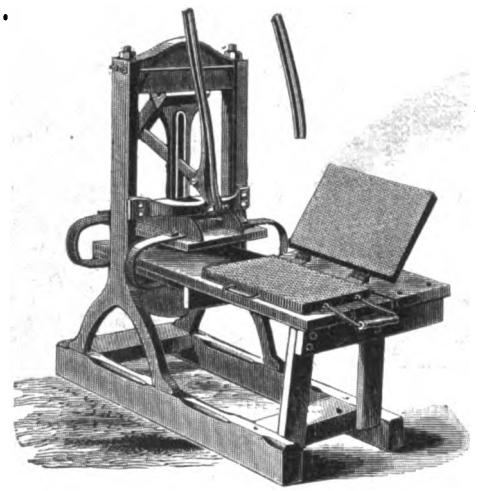
It was during the year 1878 that C. O. Perrine, already mentioned in this article, made an attempt to revive the ancient Egyptian custom of floating apiaries, using the Mississippi River, as the Nile was used, to transport the bees following the crop. He bought a small steamboat, and bought also several hundred colonies of bees, starting from New Orleans in early spring and steaming up stream. But his attempt was a dead failure, in which he sunk a large sum of money.

About 1879, other races than the Italian bees were sought after for trial in America. We had ourselves imported Caniolans in 1876, but had rejected them because of the resemblance of their workers to the common bee in color. Hybrids of these

with the common race were difficult to distinguish.

At the Chicago meeting of the North American Beekeepers' Association, in October, 1879, Rev. O. Clute, later author of "The Blessed Bees," under the nome-de-plume of "John Allen," suggested the appointment of a committee to secure the testing of various exotic races, Cyprian, Egyptian, Dalmatian, etc. H. A. King, of New York, had imported two queens claimed to be Cyprians. They were evidently pure, for all the report showed their bees to be exceedingly cross. The following year we tried this importation ourselves and soon had enough of them. We eradicated them as early as we could. Mr. D. A. Jones, of Canada, in connection with Frank Benton, of Washington, made a trip to the Holy Land, the Island of Cyprus and Egypt, bringing back a large importation of bees from those countries None of them proved satisfactory. The only foreign bees which have proven of superior quality outside of the Italian are the Carniolan and the Caucasian, both of these races producing bees slightly lighter in color than the common black bee, but without the yellow rings characteristic of the Italian race. Frank Benton, later, made a trip around the world, in the interest of the United States Department of Agriculture, seeking new races of bees. None were found that proved of greater value than the Italians.

D. A. Jones deserves special mention otherwise because of his enterprise in beekeeping at that time. He kept bees on a large scale in Ontario, educated a number of students in beekeeping and founded the little village of Beeton, which is now an important agricultural shipping point. It was in connection with him that McEvoy and others experimented on foulbrood. He established the "Canadian Bee Journal," which was published for years at Beeton. In the early eighties, a little pamphlet, "Foul Brood, Its Management and Cure," written by him, gave the revived starvation method of Schirach (1764-1770) for the cure of malignant foulbrood. Schirach is really the originator of this.



THE GIVEN PRESS—(From an old wood cut)

Among the improvements which modern beekeeping has brought to us, we should range the Doolittle method of queen-rearing, but in going back over the past we must say that although Doolittle popularized this method by adopting it with personal practical improvements, he was not the originator of it. The publication of his book, "Scientific Queen-rearing," in 1888, helped diffuse the method among queen-breeders. To find one of the originators, however, we must go back to "Gleanings" for October, 1878, page 323. In this number, W. L. Boyd, of Hamilton, Ohio, suggests that, since acorns or rudimental queencells are to be found readily in almost any hive of bees, it might be well to "cut them out, keep them on hand and get as many cells as you want by taking a flat stick, removing a larva that has just hatched and putting it in the bottom of the acorn; for the bees will accept the situation at once and soon have a nice sealed queencell from every acorn given them." The indefatigable A. I. Root, half in joke and half in earnest, then suggested that someone had spoken of artificial queencells and that they might be made by dipping a wet stick of the proper size and shape in melted wax. This was the nucleus of the idea which matured later and gave the "Doolittle method," fine descriptions of which were made in Hutchinson's "Advanced Bee Culture" and reproduced in our "Langstroth Revised."

We must not, however, neglect mentioning the Alley method of queen-rearing, which preceded the Doolittle method and is still popular in some of its modifications. His "Twenty-Two Years' Experience in Rearing Bees" became the "Bee Keeper's Handy Book," published from 1882 to 1885, in several editions. His method is also given in "Langstroth Revised" and consists of using strips of brood combs containing eggs, after removing every other egg, for the production of queencells.

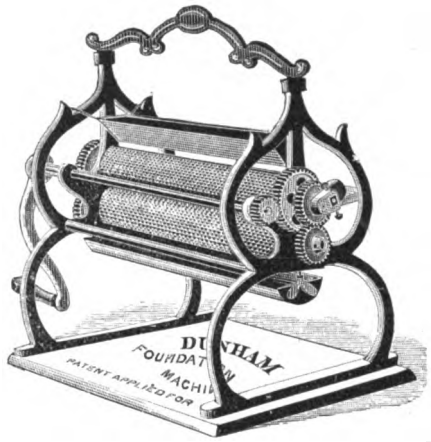
Two of the modern leading books on bees were published in 1877, Cook's "Manual of the Apiary" and "The A B C of Bee Culture," by A. I Root. The latter named was first published in installments in "Gleanings." In its present form, under the title of "A B C and X Y Z of Bee Culture," it is the largest book on bees ever published, a real beekeeping encyclopedia.

It is out of the question to mention, in these reminiscenses, every invention made during the progress of beekeeping from the skep or box-hive times. In fact, many inventions were the result of slow ameliorations

JOHANNES MEHRING, THE INVENTOR OF COMB FOUNDATION

of original ideas. We can give an instance of this with the drone and queen excluders and queen traps.

Drones were already caught, to get rid of them, in Butler's time. He described what he called "a drone pot," and Langstroth also quotes the use of such an implement in Aristotle's times. "Langstroth's Hive and Honey Bee," second and third editions, mention the possibility of confining the queen to the hive, in these words: "As the queen cannot get through an opening 5-32 of an inch high, which will just pass a loaded worker, if the entrance to the hive be contracted to this dimension, she will not be able to leave with a swarm." In 1860, or thereabout, Collin, a French priest, devised what he called "grilles and tole perforee" screens and perforated iron sheets, having openings of the proper size to allow the workers to pass, and confining the queen and the drones. In 1870, V. Leonard, of Springfield, Pa., is mentioned as making a trap, upon the idea enunciated by Mr. Langstroth (A. B. J., 1870, p. 162) built evidently of wood. In 1881, D. A. Jones, (Gleanings, 1882, p. 200) first mentions perforated zinc for this purpose. Then in 1884, Alley patented his "drone and queen trap" and queen excluders came into use.



THE OLD DUNHAM FOUNDATION MILL

Will we add a little romance to our account of beekeeping progress and invention and speak of the poet of American beekeeping, Eugene Secor? He began writing on bees about 1882 and composed some of the prettiest short idyls and songs for the enjoyment of the English-speaking apiarists. The "Songs of Beedom," published some 25 years ago by Geo. W. York, are mainly from him, while the music is the work of good old Dr. Miller. Not alone on bees does Secor write. A little booklet, "The Calendar," containing a poem for each month of the year, is one of his most delightful productions. There are other poets of the bee in our day, but none to excel him. Mr. Secor has been President of the National Association (1892) and was General Manager of that institution after the resignation of Thos. G. Newman in 1897. He was succeeded in that office in 1902, by N. E. France, one of the most successful and practical honey producers, who remained at the helm until the office was discontinued, in 1911. Mr. Secor has also been a member of the Legislature of Iowa.

Looking Backward

BY EUGENE SECOR.

YOU do me the honor to count me among the old subscribers to the American Bee Journal. You say you have found evidence of that fact in articles contributed by me 37 years ago. Yes, I'm proud to say that the Bee Journal has been coming to me without interruption for a long time. I have been looking the matter up a little, and while I cannot say exactly how long I have been on the list, I find that I've been a correspondent at least as long as your investigations show.

I began to keep bees in 1867, so you see I will be fifty years old next summer, plus —. The first thing I did was to buy Quinby's book, and I am pretty sure it wasn't very much later that I subscribed for the first bee journal published in America. Its first appearance was in 1861, if I mistake not.

The first edition of "Quinby's "Mysteries of Beekeeping Explained" was published in 1866, and Langtroth's classic had appeared earlier—1852? I had all these helps before long.

I am quite sure I was a subscriber to the American Bee Journal a long time before I dared to send anything for publication that might come under the eye of the veterans of those days. I was a novice; they were experienced. I was afraid of them. But under the editorship of Thomas G. Newman, who was always very kind to me and overlooked the crudity of my effusions, I began to feel my way into print about 1880.

This is a funny world isn't it? In my younger days I was afraid of the *old* men. Now I'm afraid of the *young* men. 'Tis the young fellows who are running things now. Young America is at the wheel today. The only reason Dr. Miller isn't a back number is because he refuses to grow old. It is always springtime where he abides. I wish that some of the rest of us white-topt has-beens could live in the sunny clime of Perpetual Youth. They say a woman is just as old as she looks, but that a man is just as young as he feels.

Beekeepers ought to be young always, for with them hope is never dead. If a frost kills the fruit-bloom they believe dandelions will feed the girl babies in the hive. If drouth sucks the nectar from the white clover, they are sure melilot will never fail. If linden refuses to give down, buckwheat and a lot of other late flowers are yet to follow. And if the honey crop is light one year we think that after a rest flowers will be doubly sweet the next summer. That is the philosophy of happiness—never to give up, never to lose courage, to forget the unhappy present and have faith in the future.

How many fads have come and gone in my beekeeping day! Many a man set out to revolutionize the industry by some invention or idea that looked so inviting to himself, and perhaps plausible to others until actually tried out, that the bee journals of the time would make interesting reading to the younger generation, if any one has the desire for historical research. Some of the things that occur to me now are: self-hiving, non-swarming, and reversible hives; deep-cell foundation, apis dorsata, red-clover queens, and the fertilization of queens in confinement. All had their advocates, but all have gone to the scrapheap of impractical theories. But in the evolution of all things and the survival of the fit a few improvements have come to stay.

The experienced ones in the brotherhood were never swept from their moorings by the claims of enthusiastic amateurs. Thus it is that conservatism tempers the heat of radicalism, and radicals warm the cold feet of conservatives. So the world is kept in equilibrium, leaning just a little toward the polestar of progress.

Nothing is more evident than the growth of beekeeping literature in the past 50 years. As the editor is reviewing that subject in a masterful way I need not enlarge upon it. But the comparison is like a mule team to electricity.

Forest City, Iowa.

Iowa Field Meet.—A Beekeepers' Field Meet will be held in the City Hall at Fairfield, Iowa, on May 9th.

Beekeeping in Guatemala.—A recent consular report gives a summary of beekeeping in Guatemala which is very interesting. The production of honey is in the neighborhood of 700,000 pounds annually, most of which has, in the past, reached European markets.

Although it is in this section of the country that the stingless bees thrive, the report places special prominence on the fact that the honey entering the markets is produced by the ordinary honeybee, mostly blacks, though Italians are beginning to be imported.

The season for honey is from October to April, which is known as the "dry season."

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Frank C. Pellett, Staff Correspondent.

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THE EDITOR'S VIEWPOINT

Iowa Inspection Report

If you live in Iowa or elsewhere, be sure and send to either Frank C. Pellett at Atlantic, or to Prof. F. E. Millen at Ames, for a copy of the State Bee Inspection Report for 1916.

Mr. Pellett is thinking of giving up his job of State Inspection. If his resignation is to deprive the beekeepers of Iowa of further reports like this one, it will be regretted. The report in question contains about 100 pages, a number of good engravings, and some 25 or 30 addresses by leading practical beekeepers and writers, besides the usual report of inspection. It is well worth a place in every library of active beekeepers.

The A B C of Beekeeping

The 1917 edition of the "A B C and X Y Z of Bee Culture" is on our desk. It is the largest, most complete and finest work that was ever produced concerning the honeybee. It is a cyclopedia of beekeeping. What more can we say?

Enticing Natural Swarms

In the Farmers' Weekly of Cape Town, South Africa, a contributor reports having lured swarms to empty hives by melting propolis and smearing it inside and about the entrance of empty hives shortly before swarming time, placing also some dry combs inside. The strong odor of the fresh melted propolis enticed the scouts that were in search of a home. He secured several swarms in this way.

Our Oldest Subscribers and Contributors

For the past year we have been trying to get together the names and photos of our oldest subscribers still living and still reading the American Bee Journal. We have asked for the names of all who have been constant subscribers for 30 years or more. But the difficulties are great in gathering together such a list of experienced producers. Some are too modest, others too aged to comply with our wishes. Still we have a list of 12 or 15 which may be increased within the next month, all men of great experience, and we propose to publish it soon.

Meanwhile we give on our cover page the photo of one of the juniors among them. The reader will find within these pages a letter from him and also a mention of his work in the current installment of "Seventy Years of Beekeeping."

Caucasian Beekeeping

We are glad to present to our readers two views of the queen-rearing apiary of the "Station Séricicole" (Silkworm Rearing Station) of Tiflis, Caucasus, also two views of nomadic honey-producing apiaries under the same management.

Professor C. A. Gorbatcheff, who is in charge of these apiaries, informs us that the rearing of queens for sale will begin to a limited extent during the present year in these apiaries. As soon as they are prepared to fill foreign orders the matter will be mentioned in the Bee Journal. We trust the terrible war conflict may be at end by that time, so that the American beekeepers may be enabled to give a full trial to the pure gray Caucasian bees of Russia, by direct communication.

Our good wishes are extended to the Caucasian beekeepers in their progressive efforts.

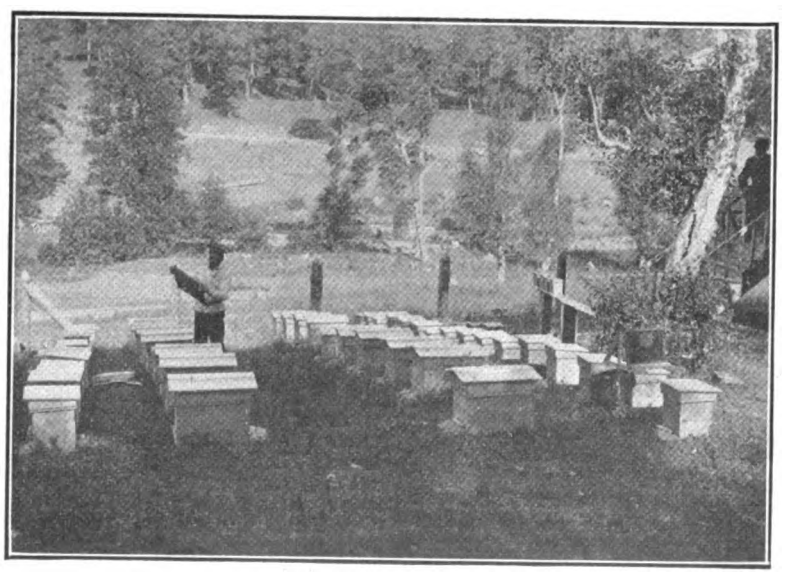
LATER.—We acknowledge from the same source an album of views of Caucasian apiaries received with the compliments of the Caucasian Beekeepers, Association. The letter accompanying this album says:

"Outside of the ethnographic interest to be found in these characteristic views of apiaries, there is another interest in them. It is that of the remembrance which they will leave, for the time is not very distant when these hives will be only a memory; the hives of the Dadant system already having displaced the native hives in several regions of Transcaucasia, during the past 10 years."

The views, some 50 in number, are exceedingly interesting. We propose to publish them, a few at a time, in these columns. They will show the diversity of ancient methods in a country which is now making great strides of progress. Russia is coming to the front.

Apiary Inspection

After the publication of Mr. Pellett's inspection criticisms, in the March number, followed by Mr. Bender's remarks in April, we are glad to give a summary of the same subject by our



ONE VIEW OF QUEEN-REARING APIARY OF THE SERICULTURE STATION OF CAUCASUS AT BAKOURIANY, 5428 FEET ABOVE SEA LEVEL.

riend Dr. Phillips, who is better placed than any of us for such work. After reading it the reader will conclude, as we had done already, that there is after all a great benefit in apiary inspection but that that benefit is mainly educational. The practical apiarists who, like myself, kept bees for half a century without ever seeing any foulbrood and all at once found themselves surrounded with it, have a very deep conviction that, if no fight had been made, the disease would have swept the country before becoming extinguished.

Although far from eradicated everywhere, it is so nearly controlled that beekeeping is thriving in spite of an occasional show of the disease. Foulbrood has been a blessing in disguise, for it has compelled more attention to the business of beekeeping.

Sacbrood

Dr. G. F. White, the scientist who has first established the bacteriological difference between the two kinds of foulbrood and who has also named "sacbrood" because of the appearance of the dead larva and its resemblance to a sac full of liquid matter, is now giving us a thorough description of sacbrood in Bulletin No. 431 of the United States Department of Agriculture.

Decoy Hives

The Editor not long ago met an experienced beekeeper, Mr. S. L. Cork, of Peru, Ill., who has had considerable experience with the securing of absconding swarms by the use of decoy hives. Mr. Cork says that he has succeeded best by placing the decoy hives in the forks of trees. During the season of 1916, a notable year for natural swarming, he fastened 11 hives in trees in this way, six feet or more from the ground, and in each of these a swarm volunteered to locate. Three hives placed on top of a shed secured only one swarm. It is creditable and easy to understand that bees would naturally look for tree hollows some distance above ground rather than for lower abodes.

The Queen is Coming

Here is a story which went the rounds of the European bee magazines some 15 years ago. It may not be true, but *"se non e vero, e ben trovato"* (if not true, it is likely).

"Lord Cecil is a lover of bees, but his pet pursuit was the cause of a little trouble to the folks of the city. He had a queenless colony once and wrote to a breeder for a queen, asking to be informed by telegraph when she was to be sent. To satisfy him, the shipper wired: 'The queen will reach your station at 3:40 p.m.' On his arrival at the station at the indicated hour, he was much astonished to see a crowd of people in their best clothes. The mayor was there in a frock coat, and a band was playing its finest tunes. Upon enquiry he ascertained that one of the telegraph operators had been indiscreet enough to give out the announcement of the arrival of the Queen of England at that hour. A few words of explanation dispersed the disappointed crowd."

Peppermint for Adult Bee Diseases

Mr. C. W. Aeppler transmits to us the translation of a letter from an eastern Switzerland apiarist recommending the use of peppermint in diluted honey to be sprinkled over the bees in diseased colonies which are suffering from diarrhea, paralysis, May disease and similar troubles.

In Italy, in the Province of Ancona, in 1916, similar remedies were recommended by apiarists who claimed that a preparation of honey with lavender, ginger, rosemary and other tonics was beneficial. We believe these things may do good, but such severe epidemics as the Isle of Wight disease would probably not yield to a treatment of this sort. Who knows, however, but that the initial appearance of the disease may be prevented by the use of tonics in the food of the bees?

ANOTHER VIEW OF THE SAME QUEEN-REARING APIARY

President Wilson on Production

The address of President Wilson to the people published on Monday, April 16, has been sent to all publishers of agricultural magazines. We cannot give it in full, but we should give emphasis to a few points of this memorable appeal.

"The supreme need of our nation and of the nations with which we are cooperating is an abundance of supplies, and especially of food stuffs..... The world's food reserves are low .....Every one who cultivates a garden, helps, and helps greatly, to solve the problem of the feeding of the nations."

Not only is it well to heed the appeal of our President to all producers to work as earnestly as possible in the production of food stuffs; it is also well to urge the people to economize their resources.

America has been—and is yet—a wasteful nation. Let us remember that the time may not be very far when some one may need that which we carelessly waste. Let us not only produce all we can, but save all we can. What we waste might be useful to some one else, if we do not need it ourselves.

Bees and Pollination

For an evidence of the usefulness of bees in prune pollination, read Bulletin No. 274 of the California Agricultural Experiment Station, by A. H. Hendrickson. It is quite interesting. It is another rivet in the evidence favoring bees in plant fertilization.

This Season's Crop and Its Price

We call our readers attention to the page of Crop and Market Reports in the back part of this magazine. Reports of offered prices and contracted prices for 1917 are beginning to filter in.

Just what the price on honey will be when fall comes is exceedingly hard to determine. We are passing through an unusual period which is subject to change in a comparatively short time.

One thing which we would urge upon our customers, however, is to make some distinction between their retail and wholesale prices of honey. Too many beekeepers in the past have sold honey locally for 10 cents or even less for extracted per pound and then bewailed the fact that they were offered only 6 or 7 cents in a wholesale way.

The Necessity for Increasing the Honey Crop

BY DR. E. F. PHILLIPS.

THE present necessity of increasing and conserving the food resources of the country, advocated by the Secretary of Agriculture in recent statements, should be realized by every beekeeper, chiefly from patriotic motives, but also from his own interest. The rapidity with which the unusually large honey crop of last year was sold does not indicate danger from overproduction, even in times of peace, and there is every reason to expect that 1917 will see a good honey market.

There need be no fear of overproduction in the face of a probable shortage of sugar. On this latter point the Secretary of Agriculture says in his statement of April 7, "Only about 20 percent of the supply of sugar normally consumed in the United States is produced domestically, and this amount cannot be increased appreciably during the coming season. Unless normal imports of sugar reach our shores, therefore, a shortage of this food is inevitable." After mentioning other forms of sugars, the Secretary says: "In many parts of the country honey production may be increased by closer attention to bee-culture."

Beekeepers should do their utmost this year to increase production, not only by increasing the number of colonies in so far as it can be done without decreasing the crop, but especially by giving their bees the best of attention. Those who have their bees in box-hives are being urged, so far as they can be reached, to adopt the modern equipment, but this will be valueless unless they at the same time adopt modern practices. Natural swarming should be curbed as much as possible, and increase should usually be made by artificial division. The crop may often be materially increased by giving the bees plenty of room for storage, for gathering often ceases when bees are overcrowded.

In this regard many commercial beekeepers are not doing their best. Those owning only a few colonies may profitably increase the number of their colonies, but they should remember that without intelligent care bees will not be profitable, except in rare seasons. The tendency at present is rightly to encourage the professional beekeeper, who knows how to get the most from his bees. The professional beekeeper, and those who wish to enter this class, should at once consider the establishment of additional apiaries, care being exercised not to overstock any one locality. To those who have not begun outapiary management, this year promises to be a good time to make the start.

Nobody can tell now what the crop of 1917 will be, but the prospects over most of the country seem good. Prices promise to be as high as those obtained for most of the 1916 crop, and possibly higher. Not more than one-tenth of the available nectar in the United States is gathered at any time, so beekeepers can do a patriotic service and can at the same time bring profit to themselves by saving some of the wasted nectar.

In order that the beekeeper may obtain a fair price for his honey and that at the same time the consumer may obtain it at a reasonable price, the bulk of the honey crop should as usual be sold on the home markets. This will do much to prevent a glut on the market in the fall. Before sending honey to wholesale markets, the beekeeper should get all the information available concerning the crop and should also have definite knowledge of the demands of the market.

The Department of Agriculture, through the Bureau of Crop Estimates, will issue the usual honey crop reports in May, July, September and November. The Office of Markets proposes to make available the data of crop movements at intervals during the shipping season. No beekeeper should send honey to wholesale markets before consulting these reports. The Bureau of Entomology will, of course, continue to assist beekeepers with the various problems of production. All of these offices will gladly assist beekeepers in their respective fields.

The beekeeper's part in the present campaign of food preparedness is first to produce all he possibly can, and secondly, to market it wisely and only after he has full information concerning the markets. Beekeepers will do much toward correcting bad market conditions by distributing their sales over a longer period, for honey is no longer a seasonal food, and to dump all the season's crop on the market at once has so far invariably led to lower returns to the producer, but has not correspondingly decreased the price to the consumer. When honey is produced in large quantities, the market facilities will doubtless be increased so as to take care of the honey as soon as it is removed from the bees, but at present it is often better for the beekeeper to hold it.

This brief note will serve to indicate wherein the beekeeper can "do his bit" in this emergency. He should realize that to assist in producing an important food is a patriotic act.

Washington, D. C.

Burning Hives Affected With Foulbrood

BY F. DUNDAS TODD.

SOME months ago I noticed that Dr. Miller thought the wisest way to handle a few cases of American foulbrood in his apiary was to wipe out the whole thing, lock, stock, and barrel. If his example is to be followed to any extent by others it may be worth while for me to set down briefly the way I handle such cases, for I fancy I have had about as much experience in burning affected colonies as any man on this continent. I frankly own I made rather a mess of things to begin with, but now I can enter an apiary in the evening when flight has stopped, smother the bees and have three or four hives a glowing mass of cinders in about half an hour. The biggest job I ever tackled was to clean up an apiary of 10 colonies and four box-hives, most of the hives being three stories high. The owner refused to assist in any way whatsoever, so I went at the affair single-handed, and in two hours and a half there was nothing left to indicate that an apiary had ever existed, beyond a big mass of glowing embers.

When I find foulbrood in any apiary and have shown it to the owner, I arrange with him to dig a hole three feet square and at least a foot deep, choosing the spot where there is little likelihood of damage resulting from the heat of the fire. In an ordinary case a matter of 20 feet from the nearest tree is generally enough, but due allowance is made for the direction of the wind. The nearer the hole is to the apiary the better, but I have had in the city to wheel heavy hives along rough alleys to a vacant lot covered with huge stumps and underbrush.

Then I want him to have on hand at least 30 pieces of first-class stove wood. We need a fire, a real fire, the kind a boy makes for a camp fire without worrying about the cost of fuel. In a beehive there is a most amazing amount of water that must be evaporated before combustion can take place. I plan to let nothing escape me, not even one bee, and it rather surprises a novice to see how quickly a roaring fire will dampen down the moment several thousand dead bees are dumped on it. The same is true when the combs are placed on the fire, for in a few minutes the water from the brood and honey will drown it out unless the heat be very great.

When, therefore, I reach the apiary my first task is to kindle the fire, so arranging the wood that the whole will be a mass of hot coals when I want to use it.. I want the earth in the bottom and sides of the cavity to be very hot, so that all water will be quickly evaporated.

The fire burning freely I attend to the smoker. In my first adventures I tried the smothering system of our forefathers, digging a hole, starting a small fire and adding sulphur, then straddling the fire with the hive without a bottom-board. The first downpour of bees simply drowned out the fire, and maimed bees were crawling everywhere. Then I turned to the smoker. I had often heard that just a whiff of burning sulphur would almost instantly smother every bee of the colony, but I want to assure my readers that is far from being the truth, for even with a powerful blast of sulphur fumes one cannot kill all the bees in less than three minutes. When I have to kill bees I try to do the job as speedily as I know how. A weak colony can be wiped out in a minute, but a hive of 20 frames covered with bees is another story, for the instant they fall off the combs they choke the air passages, cover up each other, and so prevent the fumes reaching every cranny of the hive.

It is the first few blasts that count above all things, consequently the problem is to have plenty of burning sulphur in the smoker, burning so freely that it is simply a molten, blazing mass. To attain this, start the smoker with just a little rags and work the bellows until the fire is burning freely, then drop in several small pieces of rock sulphur and get them burning just as well, then add more until you have about a quarter of a pound in all. In a little while smoke will cease to issue from the nozzle, blue flames will be common, and

the gas will issue from the explosive force.

I find it advisable, though seldom necessary, to wear my working bee suit, including gloves, as, if the hive be the least rickety, bees will leak at unsuspected places and I kill them with the fingers of the left hand as fast as they appear.

All ready, I kneel in front of the hive and place across the entrance a piece of lath, cut about an inch and a half shorter than the full entrance, leaving the blank at the right. Into this space I push the nozzle of the smoker and pump steadily and persistently until all noise in the hive ceases. To make sure of inside conditions I generally place my ear against the side of the brood-chamber, and when all is quiet I proceed to the next victim.

It is very important for the inspector's comfort that he inhale none of the fumes, so I generally endeavor to choose a night when the wind is from a southerly direction. But such ideal conditions are not always obtainable, for instance, last summer in Vancouver, north winds were persistent for weeks, so twice I inhaled considerable sulphur fumes on account of a sudden change in the direction of the wind. I usually lie out full length with my head to the left of the hive and face turned away, but even with these precautions I was caught. The result in my case is that for about three days after being "gassed" I am very languid and do not feel fit for much exertion.

The bees all smothered, I carry the first hive to the fire, bottom-board in position. Setting it down I remove the cover, turn it upside down and lay it to the left. Then I lift the hive off the bottom-board carefully and set it on the cover. On the bottom-board lie the dead bees, many thousands of them when the colony is strong. Lifting the board I shoot the bees into the fire, which ought to be now a solid mass of glowing embers. At first the fire will deaden, but as soon as it brightens up, I lift the hive and set it squarely in the center, then strip off the quilt so that the space between each pair of combs becomes a chimney. In a minute there is fierce hissing as the water runs out of the brood and honey, but in a few minutes a really strong fire will overcome all that, so I now set bottom-board and cover by the side of the body, and then carry in the next hive to repeat. By this time the burning wax gives a powerful heat so that one can pile up all the rest just about as fast as they can be handled.

The chief reason for digging the hole is to make certain that no honey can escape. The embers from the fire-wood and hives easily fill the hole and burn everything combustible. The bee-keeper generally fills it in before retiring so as to avoid all risk of fire on the premises.

In conclusion, let me repeat that the chief essentials are a powerful fire in the hole, and a thoroughly hot smoker well charged with sulphur. Either can be easily extinguished by covering up with dirt; as a matter of fact when I have smothered the last colony I throw a loose handful of dirt in the smoker. Having so much smothering to do, I keep one specially for the job, preferring the variety with the hinged cover and forward projecting nozzle.

Victoria, B. C.

[Mr. Todd uses the heroic treatment for foulbrood. He has repeatedly told us that he does not believe in trying to save the bees or the hive of an affected colony. Of course, where there are only two or three cases and they are bad, and one does not wish to be bothered with much work, it may be advisable. Yet if the transferring is done as carefully as his "burning," and if the empty hives are carefully singed immediately with a tinner's or painter's gasoline torch, there is no possibility of transmitting disease. By all means save the hive. But it is better to burn up the honey and the combs of the diseased colonies.—EDITOR.]

A THREE-STORY OBSERVATORY HIVE—F. Dundas Todd

The California State Meeting

BY J. E. PLEASANTS.

THE California State Beekeepers' meeting was held at Exposition Park, Los Angeles, Feb. 16, 1917. This was one of the best meetings the association has had for years—short, harmonious, and instructive. The first day was mostly devoted to business.

The resolution for beekeepers' Legal Aid was repealed almost unanimously, it being the consensus of opinion that such a clause in the Constitution would only have a tendency to cause trouble.

The election of officers resulted in almost the whole staff and Executive Board being chosen from the northern part of the State. And the next meeting will be held in the North. B. B. Hogaboom, of Elk Grove, Sacramento county, was elected president.

There were interesting and instructive lectures and talks on a wide range of subjects. George J. Brown made a strong talk on the methods of the "United Honey Producers", which was enthusiastically received. Mr. Brown has recently been made president of

the United Honey Producers for California. A better choice could not have been made.

Prof. Coleman's moving picture display on California beekeeping was indeed a work of art. The work he has accomplished in this line, and has in prospect, is almost the work of a genius, if means can be obtained to complete this. This is the only scenario of a complete series which Prof. Coleman has in progress of making, for the showing of every phase of the life of the apiary and handling of honey and wax. It is a stupendous work if it can be carried to completion, as no doubt it will be. The educational value of such a series of films, for schools and colleges, and for the beekeeper and laity, can hardly be over-estimated.

The ever-recurring container subject was brought up by J. D. Bixby, who advocates the use of barrels for extracted honey. The barrel *vs.* can and case was spiritedly discussed, but it would seem, while both have their merits, the 5-gallon can and its twin, securely protected in a strong case, have been proven to be the survival of the fittest. They have the advantage of being non-leak in all climates, and about as convenient a method of handling as we have yet had. The barrel was tried out long ago and discarded in most places.

Marketing through the Fruit Exchanges was ably handled in a paper by T. O. Andrews, Inspector for Riverside county, and some practical points brought out.

A standard color for honey was the subject of a discourse by M. C. Richter, who is an advocate of blending honey. While some advocate and practice this, many object to it, as it would put all honey on a level. The producers of the fine grades of white delicately flavored honeys, such as sage, white clover, etc., would suffer by such a blending. It is necessary to have the different grades and flavors to suit different tastes.

Secretary Shaffner spoke on the Legal Defense Fund. This resolution, however, was voted down and stricken from the Constitution, it being the opinion that it only caused trouble.

The address by Supt. Davison, of the State Exposition, was a strong plea for a good standing exhibit by the beekeepers. This ought to be done.

Mr. Mendleson was asked to supply a glass globe filled by the bees for the exhibit, which he agreed to do.

The meeting at Exposition Park was most appropriate. The Park is owned by the State, and Exposition Hall is designed for the use of State societies. The museums of Exposition Park are full of interesting collections peculiar to the Southwest. These afforded entertainment to the members out of routine hours. The specimens taken from La Brea Rancho asphaltum beds are a wonderful collection. The mastodon, sabre-toothed tiger, and others from this oil bed, are rare and preserved as prehistoric remains seldom are. It is something which all our residents, as well as tourists, ought to see.

The election of officers resulted in a complete staff, and almost all of the Executive Board, being chosen from the northern part of the State. The next annual meeting will be held in the North.

Orange, Calif.

Different Methods of Queen Introduction

BY DR. C. C. MILLER.

IN the British Bee Journal of Dec. 21, 1916, is a fine summing-up of different methods of introducing queens by W. A. Sheppard. He says:

"Numerous plans have been devised for introducing queens, but there are very few that can be absolutely relied upon to give satisfactory results under all conditions and circumstances. At certain times of the year, for instance during a honey flow, the introduction of an alien queen presents very little risk, and almost any method employed would be successful then; but when there is no honey being brought in by the bees, queen introduction often presents many difficulties, especially to the amateur beekeeper. The following are some of the methods that have been recommended during the last few years:

"WATER METHOD OF QUEEN INTRODUCTION.—Kill the old queen; remove all combs from the hive and shake into the bottom with a sharp jar, all the bees possible. Sprinkle the mass of bees on the hive floor until they are soaking wet. Use plenty of water; there is no danger of overdoing this part. Wet the new queen thoroughly and put her on the pile of bees. Put back combs, and the job is finished.

"INTRODUCING BY SMEARING QUEEN WITH HONEY.—Put the queen in half a cup of honey. Do not be afraid to put her away down into it with your fingers. Smear her all over, the bees will lick her clean. Get her covered deep, and pour her and the honey into the top of the brood-chamber.

"SIMMINS' DIRECT INTRODUCTION.—1. Keep the queen *quite alone* for not less than 30 minutes without food, but warm.

"2. Insert after dark, under a quilt, first driving the bees back with smoke.

"3. No further examination is to be made until after 48 hours have expired.

"4. Make no division of or nucleus from the hive within three days prior to insertion of queen.

"ARTHUR C. MILLER'S SMOKE METHOD.—Inject into hive a cloud of thick white smoke, and use enough to get the bees into a heavy roar. Then run in the queen, and shut in the smoke and queen for about ten minutes.

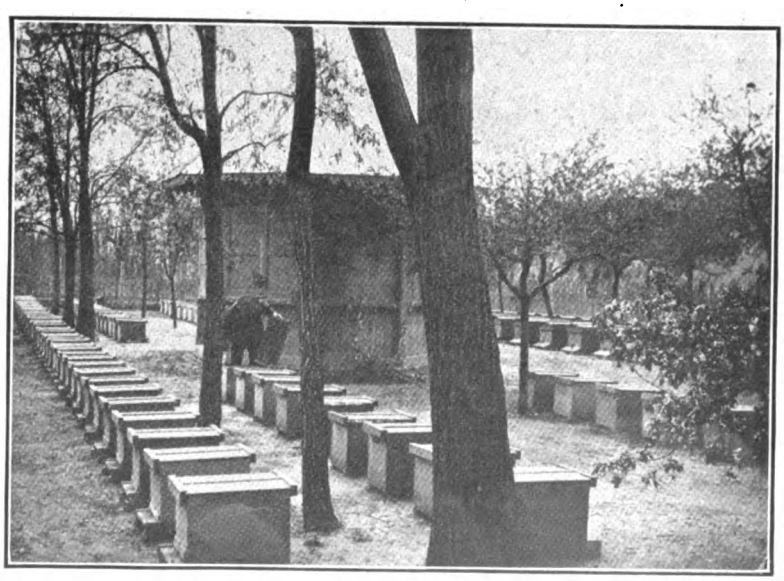
"REQUEENING WITHOUT DEQUEENING—DOOLITTLE'S METHOD—If you wish to supersede any queen on account of old age or any other reason, you have only to put on an upper story with a queen-excluder under it; place a comb of brood, with a queen-cell upon it, in this upper story. After the queen-cell has hatched, withdraw the queen-excluder and your old queen is superseded without you ever having to find her.

"The foregoing are methods of introducing queens without the use of a cage, but there is little doubt that there is less risk of failure and without much disturbance to the bees by using either of the following plans:

"FRAME CAGE METHOD.—A wire-cloth cage is constructed large enough to take an entire Langstroth frame. Into this place a comb of hatching brood, after first shaking off all the old bees; then insert the queen and hang the cage in the center of the brood nest for two or three days, when the comb can be removed from the cage and replaced in the hive. The young bees that have hatched out in the cage will not be antagonistic to the fresh queen. This is the only one they ever knew.

"PIPE COVER CAGE METHOD.—An ordinary wire-cloth tea strainer with the wire attachment for the tea-pot removed makes a good introducing cage. It is pressed into the face of a brood-comb about half an inch deep with the queen underneath. She is liberated after about 48 hours if the bees are then seen to be friendly disposed towards her. If not, she can be caged again for a further period.

"TWO OTHER CAGE METHODS.—Catch the old queen and place her in the cage intended for the new queen. After a few hours remove her and put the new queen in the cage. The bees then more readily accept the new queen, as the odor of the old queen remains behind. Or, put the queen to be introduced into a new cage with one or two newly-hatched bees from the hive to which you are going to give her.



NOMADIC APIARY FOR HONEY PRODUCTION AT THE SERICULTURE STATION OF CAUCASIUS. (Sericulture is the silkworm industry)

"MAILING CAGE METHOD.—The ordinary mailing cage, inverted over feed-hole, is generally a safe and easy way of introducing a new queen. The bees of the hive liberate her in from 24 to 48 hours by eating away the candy. This plan can be much more sure by adopting either one of the methods just described, in addition. If at the same time a slow feeder is placed on the hive containing warm thin syrup, it also helps considerably by putting the bees into a favorable humor for accepting a new queen."

LESSENING THE RISK.

Although the plans enumerated by Mr. Sheppard may be successful in general, yet with any one of them a certain percent of failures may be counted on. The number of these failures would be considerably lessened if we could be rid of the older bees of the colony to which we desire to introduce a queen. For it is these older bees that are especially antagonistic to any royal stranger. Fortunately it is possible to rid a colony entirely of all its older bees, the field bees, and in the case of a queen of considerable value it is well worth while.

If the hive be removed to some distance, and in its place be set another hive containing one or more frames of brood and honey, the bees that go afield on their return from gathering, instead of going to the old hive in its new location, will go to the old location and enter the new hive. Taking advantage of this fact, we will lift the hive from its stand, set it temporarily to one side, and set in its place an empty hive, and into this empty hive put one or two frames taken from the old hive, perhaps the two outside frames which contain little brood. Vacancies in either hive may be filled with dummies or otherwise. Any supers that may have been on the old hive will now be put upon the new one, and the hive-cover placed over all. Upon this cover we will set the old hive, of course covering it up. We may safely count that within two days all fielders will be out of the old hive and in the new. Therefore, at the end of that two days there will be only the younger bees in the upper hive, ready to receive hospitably any queen that may be offered. The queen may be given in an introducing cage at the time the change of hives is made, provided it takes two days for her to be released from her cage; if the time of releasing be less, then the giving of the caged queen must be delayed accordingly. In three to five days after the queen is out of her cage, the old hive may be taken down and restored to its original place on its stand; any comb or combs that had been taken away being returned, and the hive that has been upon the stand for a few days entirely removed. The bees that have become fielders in the hive that has been on top will now, upon their return from the fields, settle upon the top of the hive where they suppose their entrance ought to be, perhaps forming quite a cluster. Soon, however, some bee of exploring turn will make its way down the front to the entrance below, others will follow, and all will be well.

ABSOLUTELY SAFE INTRODUCTION.

There is, however, a plan of introduction that is entirely safe. It is some trouble, but may be well worth while in the case of a valuable queen. About eight days before you expect to introduce your queen, go to a strong colony and put all but one brood in an upper story over an excluder, leaving the queen with one brood below the excluder. Another way is to put an excluder over a strong colony, over this put an empty story, and fill this empty story with frames of brood taken from different colonies. This plan has the advantage that you may choose only the best frames, those that are filled with well matured brood. Eight days later, when all brood will be sealed, brush every bee from these combs, put them in an empty hive, set this hive on a stand of its own, put in your queen, and close up tight so that you are sure no bee can get in or out. If you think there is any danger that the brood may be chilled at night, then you must put the hive in a room that will be warm enough at night.

A still better way is to put the beeless brood in a hive-body over an excluder upon the hive of a strong colony, putting in the queen and covering up without any bees. Of course young bees will at once begin emerging from their cells, having known no other mother will be entirely friendly to the queen. About five days from the time the queen was given, these bees with their brood and queen must be put upon a stand of their own, in case they were not at first put upon their stand, and the entrance must be opened enough to allow the passage of one bee at a time. As more room for passage is needed, the entrance must be enlarged. In a few days you will have a good colony without having endangered the life of the queen in the least.

ANOTHER NOMADIC APIARY OF THE SERICULTURE STATION OF THE CAUCASUS

Why Some Beekeepers Fail

BY H. B. PARKS, BIOLOGIST.

THE following paper is the result of an investigation as to why so many of those who keep bees do not make a success of the business and why so many of those who have tried have failed.

The area covered by this investigation is the Grand River System of Northwest Missouri. While this is not a region of extensive orchards, it is a section where small orchards are very common, where alfalfa and sweet clover are most abundant. Of the 159 species of plants which are visited by the honeybee for nectar, in a very similar location in Illinois, as reported by Dr. Charles Robertson, who has done more perhaps than any other man in the Mississippi Valley in studying insect visits to plants, 142 grow in greater or less profusion here also. This region is so located that it partakes of the character of both the prairie and forest. The climate is favorable to the bee, as the bee-trees cut each year attest.

A few attempts at interviews with bee-men were so laden with results that the writer adopted the census method of gathering information. Few men like to tell of their failures and only a few who were successful would talk. A reliable beeman was interviewed, facts about his own experiences and what he knew about others were recorded, then these statements were in a casual manner brought to the attention of the one about whom the statement was made. In almost every case the statement was verified and some additional material added.

The writer attempted to follow the outline given below:

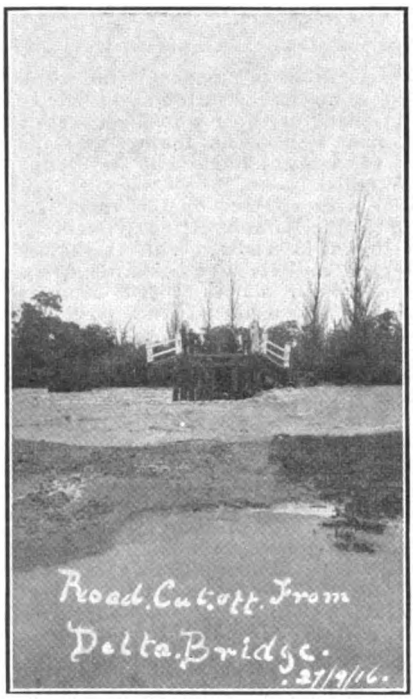
1. Time you have been engaged in bee work?
2. How did you commence?
3. Why did you start beekeeping?
4. What kind of bees did you have?
5. What kind of hives did you use?
6. What was your greatest trouble?
7. Did you have disease in your hives?
8. How many seasons did you fail to get a honey flow?
9. What was the reason?
10. Would you advise others to keep bees?
11. How many swarms should a man keep?
12. Do you count yourself a success

or failure as a beekeeper?

13. In either case, why?

Mr. B.—The first man interviewed is a bee lover; has kept bees 35 years and is well informed. He has at present 37 colonies of bees. This year he took off 2700 pounds of section honey from 30 colonies, spring count. He is a small farmer, and lives on a 10-acre farm at the edge of a small town. He took up beekeeping as a boy because of an accident that lamed him. One year he took off 8000 pounds of comb honey from 32 colonies. Some years he got only 300 pounds from 30 colonies. He would advise all farmers to keep a few colonies, but thinks only the specialist can make money with bees. He has no disease and few moths; attributes success or failure to get honey to the food supply of the bees.

Mr. X. is a specialist, and did not like



THE FLOODS IN AUSTRALIA COME DOWN IN A NIGHT AND SELDOM EXTEND OVER TWO DAYS

to talk. He has about 200 colonies, but would give no figures. His honey is on sale in a number of the neighboring towns. He says that any one who attends to the business will have success. Does not advise farmers to keep bees.

Mr. C. H. was crippled by an accident 15 years ago; was set up in the bee business by his employer, and did well for a few years, but did not like bees. The moth killed most of his colonies; has only five colonies today. ome years he never put on supers or removed those already on. Beekeeping is a failure and the man a fool who tries it. In this case the hives were in a thicket of plum bushes, and had not been touched for three years.

Mr. G. lives in town, and has 10 colonies; keeps this number and sells the excess swarms; has never had any trouble. He advises all to keep a few colonies; claims a good honey flow each season.

Mr. C. C. was a common type of the fall of 1916, and was the most enthusiastic bee-man found. Had one hive. Had taken off 30 pounds of honey, and knew the A B C book by heart. Had already figured out what he would do with 50 colonies of bees.

Mr. G. W. is the old style bee-man of the timber. His pastime is hunting bee trees. Has caught all his swarms or reared them from wild swarms. He uses gums and the old box-hives. Has had no moth or disease that he knows of. Mice have bothered him. Has 10 hives, and got 18 or 20 gallons of honey this year. He advises all to keep bees.

Mr. M. F. R. has no bees at present, but knows all about them. He bought his colonies at a public sale because the auctioneer was eloquent and the bees cheap; paid 75 cents a colony for 12 colonies, and $85 for supplies; lost every new swarm. The bees started a runaway that caused a loss of $65. That fall he took off 125 pounds of honey. The next summer he had similar luck. The third spring he had only four colonies that were alive. The hogs got into the orchard and upset the hives.

Mr. M. purchased two stands in new hives with supers from a bee firm two years ago. He placed all the supers on the hives and nailed them there. Has never looked into the hives since that time. He is waiting for the colonies to become strong before taking the honey; expects to take off a large amount next year. If a bee has plenty of room it will not swarm and continue to deposit honey. The easiest way to keep bees is to give them lots of supers and every two or three years take off the honey.

Mr. Mc, living on the next farm, showed me a very fine swarm that came from one of the above mentioned hives in less than a month after Mr. M. placed them in his orchard. This colony gave Mr. Mc 30 pounds the first year and 70 pounds the last year. This man is a very successful beekeeping farmer. He has 15 colonies.

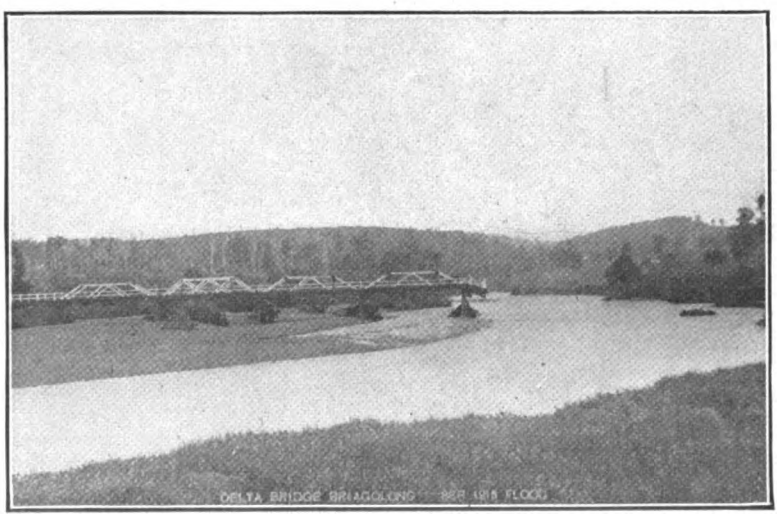
One hundred cases we either interviewed or heard of on good authority. Of that 100, 80 p:rcent failed through absolute ignorance. Of these 80, 20 began keeping bees without any knowledge except that they made honey, and ended in two or three years with the knowledge that bees neither make honey nor pay. One claimed that the birds caught all his bees. Seventeen allowed their hives to be washed away by high water, or burned by fire set out to clean the orchard of weeds, or destroyed by live stock. Two claimed that moth killed out their bees. Five lost part by swarming and sold the rest to "git rid of the pesky critters." Fourteen came into possession of bees through purchase of farms on which the bees were, or through inheritance. Each made the attempt but failed, and now have no bees or only a few straggling colonies, because, to use the expression of one of the parties, he didn't "jest git the hang of it."

The remaining 20 cases were mostly boys or women who started beekeeping because some one else did or they were in hopes of becoming suddenly rich, just like the lady in the story paper. Most of these discontinued the first year. One persisted four years. All of these were pure cases of failure because they knew nothing about bees.

Of the 20 percent, one-half may be considered successful. Eight of the ten so considered themselves. Two of those thought the most successful by their neighbors, did not believe themselves as such, as the sale of honey and excess of swarms did not equal the expense through a period of years.

Of the remaining ten, five are too new to mention, but the owners are well informed and hope to succeed. Three are keeping bees for fun. They take up every new fad and get few results. Two were very indefinite in their reports except that they considered themselves successful.

Now for some explanations and observations. Any one who has attempted to keep bees has been considered a beekeeper except where bees have been taken from cut bee-trees and taken home just to see if they would live through the winter. There seems to be a popular notion that bees hibernate, and if the winter is mild they will live through. Fifteen such swarms are being watched. Of the 15, one was taken from a cut bee-tree where it had been abandoned by the cutter, by a good beekeeper and is being fed.



A WASHOUT IN AUSTRALIA—AUSTRALIA ALPS IN THE DISTANCE
F. Rayment

Of these 100 parties, 70 still have bees, and 20 have over 10 colonies each; five recommend the keeping of a number of colonies; ten that from two to five colonies are profitable on every farm; twenty that bees are for the specialist, and a nuisance for the common man. About 3 percent had heard of bee disease, and one party had seen it.

To sum up the causes of failure it was becase the would-be beekeeper did not know of the whys and hows of the bee trade. One did not know how to buy supplies, another how to handle the swarms, another how to sell honey, another where to place the hive, and so forth. All were *not* inclined to study the subject, for everybody has sense enough to keep bees. All those that have succeeded are men who have studied the cause of former failure and keep in tune with the bees and other bee-men, are enjoying their labor and the sweets thereof.

The lack of preparation was everywhere apparent. Those who were most successful were the most forehanded, and many a failure was caused by a lack of preparedness. If the materials are well cared for, the tools in their places, no time will be lost, no stings will have to be picked out; in fact, preparedness is the key to success in bee work. Let the slack time in winter be filled with preparation for next summer's work and not in theorizing on what we could do if we had 100 colonies of purest Italians in an eternal clover pasture or similar foolishness.

Albany, Mo.

Vaseline to Prevent Burr Combs—An Old Idea

BY ARTHUR C. MILLER.

IN the Bee Journal for January, page 12, a Mr. Oettle is reported as suggesting the use of vaseline to prevent burr combs, and says that "all exposed parts of supers, etc., should be vaselined on the bottom edge."

As far back as the early eighties, James Heddon mentioned the use of tallow for such purpose, and if memory serves me truly the use of a grease of some sort to prevent sticking by propolis dates back over a hundred years, though at the moment I cannot quote the author and place.

For a season I used tallow thus, and particularly on the edges of the end-bars of my closed-end frames, but I early discovered that there were worse evils than the sticking together of hive parts. Today I stop and scrape the edge of an end-bar at some time greased or send into the shop for cleaning, a super or other article at some time treated to a dose of antistick.

It is exceedingly disconcerting to have a previously decorous and well-ordered super go sliding off onto the ground at the slightest touch of hand or breeze, as the greased ones will sometimes do on a nice hot day. The grease and the propolis mix and make a very good lubricant when the temperature is up.

Another drawback to the use of grease is the daubing of one's hands, tools, smoker, etc., until nothing can be held securely. There are some things much worse than propolis and burr combs. An annual "clean up" keeps the former within bounds, and a change of queen will eliminate the latter.

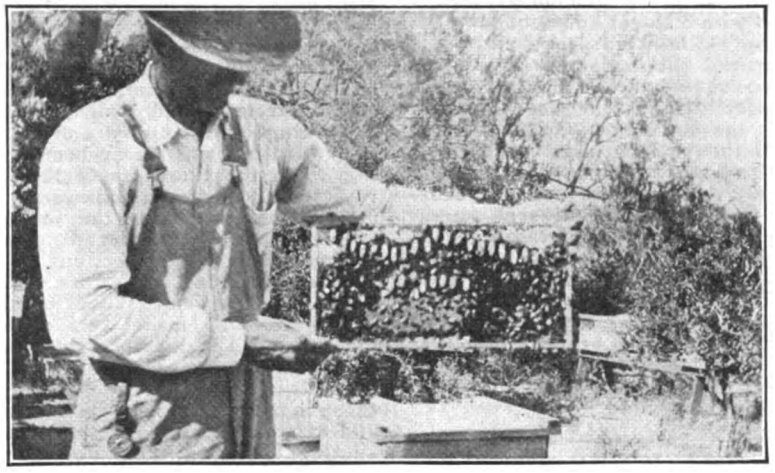
One of the advantages of a library of old bee books is the knowledge to be gained of the practices of those who preceded us, thus either saving us useless experiments or furnishing us with some good or forgotten method or telling us the true originator of some "modern" usage.

Providence, R. I.

Queen-Rearing—Combination Method

BY J. E. HAND.

THE queen is the mainspring of the existence of the colony, and the pivotal point of successful beekeeping; requeening to prevent swarming is rapidly gaining favor, therefore, the knowledge how to rear good queens is a necessary qualification of a competent beekeeper, without which he is not a complete master of his profession. The methods of queen-rearing in vogue today are largely modifications of methods introduced by G. M. Doolittle and Henry Alley a quarter century ago. Since space forbids a specific definition of these methods, suffice it to say, "in rearing queens for home use when simplicity of equipment and manipulation are important factors, a combination of the two methods mentioned has its peculiar advantages."



THIS IS QUEEN-REARING TIME IN THE SOUTH
A batch of queen-cells ready for nuclei, in the apiary of Grant Anderson, of Texas

The equipment consists of a brood-frame in which removable cell-bars are fitted parallel with the top-bar, and 1¼ inches apart. Place a clean empty comb in the colony having the breeding queen and examine it daily. When it is well filled with eggs remove the queen and combs from a strong colony, leaving two combs with honey and one with brood. Cage the queen, shake the bees onto the running-board, place the caged queen and beeless brood in the top story of a strong colony, above a queen-excluder, and proceed as follows: Remove the comb containing eggs from the breeding colony, slice it into strips lengthwise, with two rows on each strip. Shave the cells from one side of said strips down to the septum, fasten said strips to the cell bars with melted wax. Crush the eggs in alternating cells, leaving the cells containing eggs alternating and zigzagging in the rows, and place the bars in position in the frames.

This frame containing strips of prepared worker-cells containing eggs, is placed in position in the queenless colony, between the two combs of honey, after removing the frame of brood. This sudden relief from hopeless queenlessness is hailed with great rejoicing, and the queen-rearing impulse is developed to the highest pitch. The nurses recently deprived of their numerous nurselings, will have their stomachs full of chyme, the cells containing eggs will be enlarged and the tiny larvæ will be treated to a superabundance of food as soon as they emerge from the egg. If no nectar is available queen-rearing colonies should be fed a pint of syrup daily to rear these queens.

There are good reasons, however, why these queenless colonies should not be allowed to finish the cells, (1) there are too many for one colony to finish if the best queens are wanted. (2) The absence of nurselings will cause a decrease in the secretion of chyme by the nurses, and it is imperative to get as many cells started as possible before the secretion of chyme reaches the minimum; therefore, queenless colonies are employed to start cells which are finished by queenright colonies. As soon as a batch of prepared cells have become well started and liberally supplied with food the frame is removed and another frame of prepared cells given, never allowing a queenless colony to start more than three batches, for reasons just given. The queen and brood are then returned, and the short period of queenlessness will not cripple the efficiency of the colony.

Auxiliary queenright colonies are prepared to finish embryo queen-cells in the following manner: The strongest colonies are selected and the queen limited to the lower story by a queen-excluder, with the most of the brood in the upper story. In the center of the upper story we place a frame having a bar with 15 embryo queen-cells attached. When these are finished another batch

is given; this may be repeated so long as warm weather continues.

This method is simple and practical, and will produce high quality queens. It has been ascertained that the food given to all larvæ during the first three days of their life is the same whether said larva is cradled in the gilded cell of royalty or in the humble cell of a common worker, also that during these days of grace a larva in a worker-cell is given more food than it can consume; therefore, to all external appearances it could not fare better if hatched in a queen-cell; therefore, it is claimed that if a larva less than three days old is grafted from a worker-cell into an artificial queen-cell it will produce just as good queens as though the larva had hatched in the queen-cell.

At first sight this seems like sound logic, but there is an abnormal side to the grafting problem, that cannot be ignored. Under *natural* conditions a queen-cell containing a larva three days old is a perfect queen-cell in form and feature, and is nearly full size; therefore, bees are not pleased with three-days old larva in an open mouth wax-cup bearing little resemblance to a queen-cell with a royal larva at any age, and such a poor counterfeiter is viewed with disfavor and robbed of the food so skilfully (?) provided by the grafter, and the neglected larva is left with no visible means to sustain life until such time as the bees see fit to accept the intruders. On an average, half of the grafted larvæ perish outright from starvation and neglect, and certainly the survivors are not benefitted by their period of semi-starvation. The weak point in grafting is the period of fasting immediately following, at a time when the royal larva should be floating in a superabundance of food. Bees are more competent to select larvæ of the proper age to rear good queens, than the most expert grafter.

Birmingham, Ohio.

Certain Hive Fixtures

BY F. GREINER.

TO practice economy in bee-fixtures at the expense of efficiency or neatness is a poor way to save or reduce expenses. I am afraid many of us are making mistakes along this line, some here, others there. For instance, the use of No. 2 sections cannot be generally recommended. Perhaps they may be admissible when honey is to be cartoned in sealed enclosures. I know of beekeepers who use old stained, yes, even dirty boxes of previous years use. I have found them time after time in country stores. How bad they look! How much better a clean white box of honey appears by their side!

One of the things of great importance in the production of comb honey is that we produce honey which does not leak. Any fixture producing or accomplishing this object is to be preferred even if it should cost a little more than the one having a tendency in the opposite direction.

For half a life time I have used differently constructed section supers alongside with another; not one kind one year, another kind another year; no, I tested them in the same seasons, in the same yards; even different supers on the same hive at the same time, and, while I have found several different supers to give reasonably good results, nothing has given me the satisfaction that a real wide-frame super affords. This, however, is not what I started out to say. I intend to confine myself to the greater detail, the separator; for whatever the style of super selected might be, the divider or separator remains the same *almost in all* cases. I am referring here to the wire-screen separator and the old tin or plain metal separator, otherwise the wood separator has long become the popular fixture.

It is all right even from the standpoint of the bee which does not take as kindly to metal as wood. The latter is more congenial to the nature of the bee because of its being a better non-conductor of heat and cold than metal is, the material the bee has adapted itself to during untold unknown ages. This wooden separator has from time to time been changed. Some have used a simple plain thin board and are continuing its use; others have perforated it, some cleated it, and still others have made a cleated fence. As long as a plain board was used all went well providing same was of proper width. I have used them as wide as the section was deep, and thus produced perfect non-leaking honey combs, but in this case the sections had a deep beeway. When the beeway is only ⅛ of an inch deep as in case of the no-beeway section when the thickness of the cleat represents the beeway, the separator must be narrower than the section is deep by ⅛ inch in order to give the bees free access to the sections.

When first using separators we were not so very particular about this matter, and some we made were about ¼ inch narrower than the outside dimensions of the boxes. The result was that the cells in the lower row as well as those in the upper row were drawn out and extended beyond the wood, necessitating trimming them down before crating, producing a leaky mess. It has been a dear lesson to us to find that separators should not be perceptibly less than 4¼ inches for the 4x5 tall section. When we adopted fences the tendency to produce leaky section honey was also increased in as much as the bees sometimes start little legs from the edges of the little fence boards to the face of the combs; besides the honey produced with fences has not unfrequently a washboard appearance, particularly so when they have been in use for a few years. For these reasons I prefer the solid smooth board as a divider to the fence or even the perforated separator. The smoother the surface of the separator the surer we are of good results.

The cleat was added to the separator in order that we might use no-beeway sections. It was a delicate matter to decide what the width of this cleat should be. They were tried quite wide, ¾ and ⅞ of an inch, I think. I have them in use today. Finally the other extreme was adopted, viz: ¼ inch wide. Many thousand fences with these narrow cleats are found in the bee yards of today. Do they give satisfaction? What do we find anyway? In good honey seasons, when clover and other blossoms yield nectar profusely, and when the combs are sealed clear to the wood, as it seems desirable, the sealing becomes attached along the edges where the cleat is, not merely to the wood of the section, but also quite often to the cleat, too. When the filled section is removed from the holder this capping is torn loose and we have a bad leak. When the wide cleat is used the bees respect it and build around it, never attaching the capping to it.

The surface of the comb shows a slight depression to match the cleat. It might appear as though the edge was beveled off, which is not nearly as much of a disadvantage as the effect the narrow cleat produces. This disadvantage, this depression of beveling may be reduced to a minimum by reducing the width of the cleat, but we must not go beyond a certain limit. A cleat 9–16 inch wide gives good result and at the present I consider that width the limit. Possibly the ⅛-inch cleat is safe to use, but this I do not know; we will do more experimenting on this point, for we want the cleat as narrow as possible. I have decided to drop the beeway section entirely, and I have been asked, "Why use the no-beeway section at all?"

Briefly I will answer this question: "On account of economy." We save time in cleaning or scraping the sections when filled; we save money when buying the sections; we save one-seventh of the shipping-cases. There is no difficulty in handling honey in no-beeway sections, not in practice anyway.

Naples, N. Y.

Manipulation of Bees

BY L. HASEMAN.

(*For beginners.*)

TO the beginning beekeeper, his first attempt to open the hive and handle the combs and bees may be beset with some difficulties, but in time this becomes the most fascinating part of beekeeping. He must study the bees, their habits, nature, likes and dislikes, and then accustom himself to their ways. The honeybee is not a vicious creature, and if given anything like the consideration it deserves it will not fight.

While handling bees, avoid jarring them or making any quick nervous motions. These two mistakes will start trouble in any bee colony. Always wear a veil to protect the face, and use cool smoke sparingly at the entrance and under the cover as it is being gently raised. Use smoke to induce the workers to fill their stomachs with honey, after which they are less likely to sting. Avoid pinching bees between your fingers, as they resent such careless treatment. For best results select the warm part of the day when the workers are actively gathering nectar or pollen, for at such times there are fewer bees in the hive, and those present are more docile. Never open the brood-chamber when the weather is cold, if it can be avoided, for you are apt to chill the queen and the brood.

These are few of the do's and don'ts which the beginner beekeeper in particular should keep in mind. A little careful study of the bee and its life and habits, and a little effort to adjust one's actions to those of the bees will soon make beekeeping both an interesting

pursuit and one of value to those who are willing to work and learn. Every farmer could produce his own supply of honey by keeping and properly caring for a few colonies of bees.

SELLING HONEY.

Honey is a product of the farm which will practically sell itself if it is properly prepared for the market. The marketing of a small surplus is a simple matter. Let your neighbors know you have the pure unadulterated article and they will be glad to relieve you of your surplus. The marketing of a large crop may not be so simple, as you may have more than is needed for your immediate neighborhood or city market. For disposing of large surpluses, advertising in newspapers and otherwise will increase the demand from cities and from a large country district. One Missouri beekeeper, this season, had 30,000 pounds of honey which he marketed largely in his own county, and he says he could market much more if he had more good white clover honey. White clover honey is our most important honey crop, and it usually sells more easily than the darker honey.

Columbia, Mo.

Results of Apiary Inspection

BY E. F. PHILLIPS.

(This is the second of the papers read at the New York meeting of officials in charge of beekeeping. Mr. Pellett's paper, "Problems of Bee Inspection," appeared in the March issue.)

THE inspection of apiaries in the various States is unfortunately conducted according to many different systems, and in some cases with little apparent system. This work cannot be cast in a mold, because of the wide divergence of conditions in the various beekeeping regions of the United States, but it would seem possible to standardize the work to some extent by discussions in this association and elsewhere. To show the divergence more clearly, some of the differences in plans may be mentioned. In some States it is the policy to do intensive work by attempting to visit and advise all the beekeepers in a locality before the inspector leaves; in other cases inspection is made only on request, and only a few beekeepers are visited on each trip from the central office. In some cases emphasis is placed on work with the individual beekeeper; in other States meetings and demonstrations are held to reach a large number of beekeepers. In some States the supervising officer has a bird's-eye view of the situation throughout the State, made possible by adequate records and maps; in other instances the inspector has no such efficient records and wanders more or less aimlessly about, helping wherever he can but without a broad outlook. To obviate some of the grosser errors, the Bureau of Entomology has advised supervision of the work by an already existing office, not only to save administration expense, but especially to make the work constructive, comprehensive and efficient. The history of inspection proves conclusively the advantage of such a system, and shows the relative inefficiency of an independent inspector.

The title of the present paper indicates a desire to know whether the apiary inspection is profitable. At the request of beekeepers, the various States are spending thousands of dollars annually in this work. It has been in operation on an ever increasing scale since the first law was passed in Wisconsin in 1897, and enuogh experience is available to warrant the demand for a showing of results.

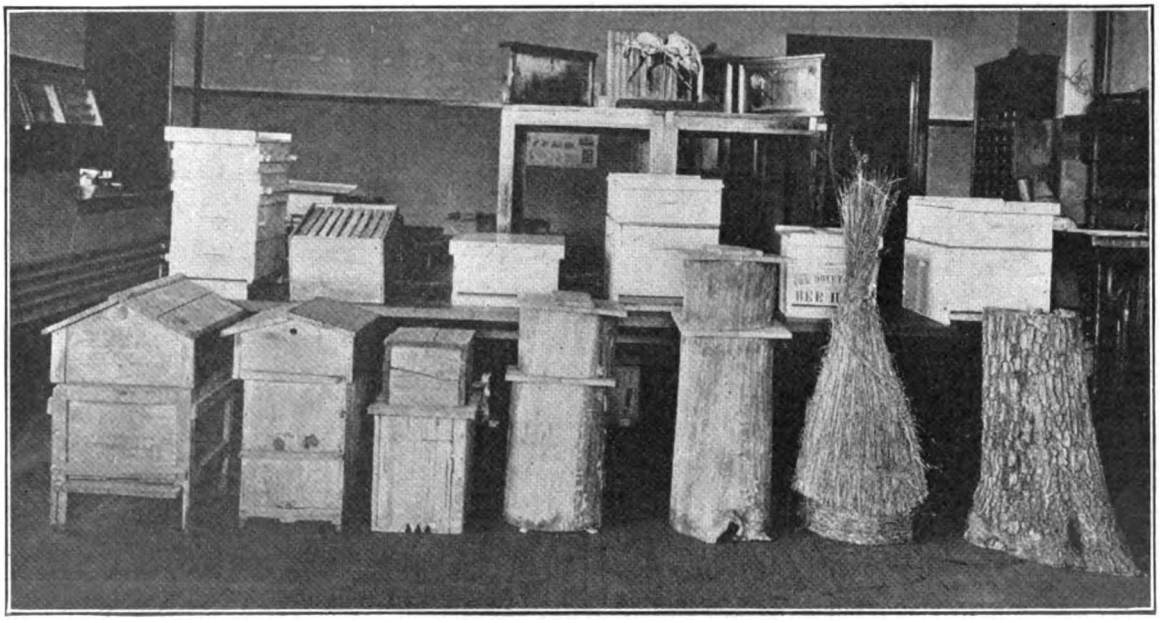
If conclusions are based on observations of a general character, one must believe that inspection is a decided benefit. Even in those States where there is little or no system, and where the most careless work is done, we find individual beekeepers aided to better beekeeping and enabled to combat disease with success. The making of one good beekeeper in a country may result ultimately in greatly increased wealth to the State, so that one cannot easily measure the economic value of such work. In spite of valid criticisms and there is abundant room for criticism in various States, we must conclude from such an examination that apiary inspection is economically sound and that the expenditure is warranted.

But so far the general approbation of the work has been based on just such general observations, without analyzing the situation carefully. It is now well after 20 years of trial to examine at least some of the available data to make the criticism more valuable. Such an examination cannot be made comparative because of the divergent systems just mentioned and often because of lack of available records. It is entirely just to conclude that where intelligible records are lacking the work is least valuable. To analyze all the available data is an enormous task, which cannot be undertaken at present, but a few specimens may stimulate the administrative offices in this work to apply this test, and it is hoped that the analyses will be published. These results should be announced even though the results are not all that might be desired, and if possible the results should be interpreted. This is the type of comparison and tabulation which the author recommended to this section at the annual meeting in 1915.

In the Mohawk Valley, New York, European foulbrood broke out in 1894, but it was not until 1899 that apiary inspection was established, as a result of the efforts of the organized beekeepers. The inspectors made an effort to determine the loss in colonies actually destroyed by disease, and while this record is probably incomplete, they found that colonies valued at $39,487 were reported lost. In 1899 (the first year of inspection) and successive years to 1904, the loss of colonies that died was given in the 1904 report as follows:

1895–1899	$39,487
1899	25,420
1900	20,289
1901	10,853
1902	5,860
1903	4,741
1904	2,220

When we consider the fact that in



THE EVOLUTION OF THE BEEHIVE EXHIBIT AT COLUMBIA, MO., IN JANUARY—Missouri Apicultural Society

1900 diseased colonies numbering 7253 were found (valued at perhaps $40,000), it is evident that the disease was spreading with great rapidity, and the State of New York made a good investment in establishing inspection whereby the percentage of diseased colonies was forced down from 23.9 in 1900 to 3.6 in 1905. About that time other outbreaks occurred, but the percent of colonies diseased has remained low.

Perhaps a better but less definite indication of the way in which, through inspection and education, the epidemic has been turned to the advantage of the beekeepers is in a comparison of past and present conditions in the Mohawk Valley. It appears that before the outbreak of European foulbrood there were comparatively few extensive beekeepers in the valley and many uninformed and indifferent small holders. No inspection or educational system yet devised can save the careless bee-keeper, and it is unsafe to attempt too much along that line, but through the efforts of the inspectors and other educational sources, the careful beekeepers and those who would make an effort to clean up the disease were instructed in the diagnosis and treatment, so that today they have little fear of European foulbrood. There are probably fewer beekeepers than formerly, but undoubtedly there are more colonies of bees and the average annual crop is larger than before the epidemic. The epidemic has thus been turned to an actual benefit to the industry through inspection.

In northwestern Indiana, European foulbrood is prevalent, and probably has been present for many years. In the eastern portion of the State, American foulbrood is abundant, and has caused enormous losses. On a brief trip of inspection, which the author took with Mr. George S. Demuth, then chief apiary inspector, but now in the Bureau of Entomology, several apiaries in the European foulbrood territory were found in which every colony was diseased.

In 1909 apiary inspection was instituted in Indiana under the supervision of the State Entomologist. Of the 6036 colonies examined that year 23.7 percent were diseased, and in Porter county 66.5 percent of all colonies inspected had European foulbrood. The highest record for the prevalence of American foulbrood so far recorded is for Randolph Co., Ind., in 1910, where 83.5 percent of the 3000 colonies examined were diseased or dead.

In this State, not only is the percentage of diseased colonies being reduced but the beekeepers are finding out what their trouble actually is, and beekeeping conditions are rapidly improving. It will take strenuous and continued inspection and encouragement to put the business on the footing which it should occupy, but the short time so far spent in the work shows that here, too, the epidemics may ultimately be instrumental in making better beekeepers and thereby be an indirect benefit. The data are not at hand, but Mr. D. W. Erbaugh is responsible for the statement that at present American foulbrood is scarce and the beekeepers in that territory are increasing their apiaries and finding beekeeping profitable. This is the most striking result of the Indiana inspection, even though no work was done there between 1910 and 1916.

Through the courtesy of Mr. E. G. Carr, of the New Jersey inspection service, I am able to give data concerning the percentage of infection in Salem, Cumberland and Cape May counties, N. J., 1913 and 1915.

In this territory in 1913, there was European foulbrood in 30.2 percent of all apiaries inspected, and American foulbrood in 3.8 percent. In 1915 no American foulbrood is recorded, and European foulbrood was found in 25.9

THE RESULT OF GOOD BEEKEEPNG IN MAINE—HOME OF O. B. GRIFFIN

percent of the apiaries. Of course, the percent of apiaries showing the disease cannot be decreased as rapidly as the percent of infected colonies. During the two years the number of colonies increased from 836 to 1136, a gain of 35 percent, which is the true test of efficiency. The plan in New Jersey is to cover a county as completely as possible before leaving it.

In Connecticut, in 1910, there were inspected 1595 colonies, of which 49.6 percent were diseased, and disease was found in 76 percent of the apiaries. Without giving the data for the intervening years, it may simply be recorded that the records for 1916 show 3898 colonies inspected, of which 7.05 percent showed European foulbrood, and 0.15 percent showed American foulbrood. European foulbrood was found in 18.8 percent of the apiaries and American foulbrood in 1.07 percent.

Obviously changes in inspection policy and the routine methods of the work will influence these figures. For example, in Connecticut, inspection was formerly done only on complaint, and this restriction has been removed. However, from the figure given for these four States there can be no doubt of the economic value of the apiary inspection.

Every effort should be made to improve the inspection service, and this can perhaps best be done by publication of the results of inspection. The inspection must also be improved by discontinuing, so far as possible, the payment of inspectors only for days spent in the work, which too often means for days when they are not otherwise occupied.

The title chosen for this paper may be assumed to be covered by the type of data given, but at this opportunity it may be well to enlarge the discussion by way of pointing out a method of overcoming some present defects. As is well known, the Bureau of Entomology has during the year begun extension work in beekeeping, in cooperation with the regular extension offices. So far this work is confined to the southern States. When it is considered that the value of inspection comes chiefly from the efficiency of the educational feature of the work, it will be seen that, in a sense, extension work is but a continuation of what has been done for years in some States. However, an extension worker is freed from the odium of police power, which is at times a detriment to the inspection work.

Since in perhaps half the States the apiary inspection is below its possible efficiency, and, since without unwarranted interference this cannot well be changed, except by the beekeepers of the State who often fail to recognize the poor quality of the work, it is pertinent to suggest that extension work should replace at least the incompetent

One does not associate extensive beekeeping with the State of Maine. Yet there are many apiaries there. The above is one of the apiaries of O. B. Griffin, of Caribou

nspection, or, if it is possible, supplement and stimulate it.

The future of the beekeeping industry depends in no small measure on the creation of professional beekeepers. Apiary inspection was instituted chiefly to save what already existed and was not conceived as a creative agency. If inspection is to assist in giving the much needed impetus to the industry, every apiary inspector should emphasize the extension feature of his work, so far as his authority will permit, and in addition should encourage and support the extension work which openly assumes the task so long carried unannounced by the inspection. By enlarging the extension work to the fullest extent, we may expect still more satisfying results than those here given.

Washington, D. C.

How Products of the Hive May Be Increased

BY J. E. CRANE.

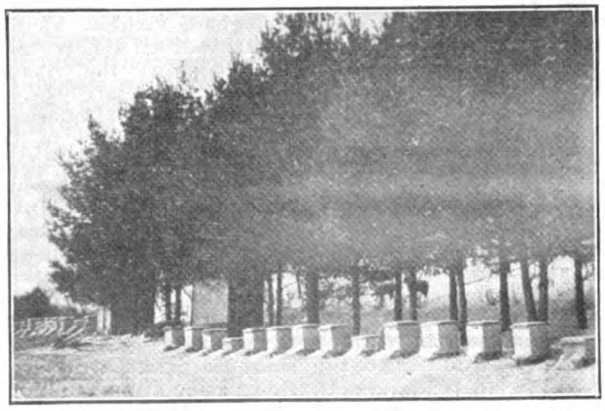
IT has been often observed that one hive of bees is much more productive than another, but the reason is not obvious. It is the purpose of this brief article to point out two or three reasons why this may come about. The first and most usual reason is a large population at the right season to gather the surplus. We notice in the "great war" now in progress, the value of large armies, and the advantage they have over the smaller bodies of men. The same is true in the work of the nive. The more numerous the field workers, other things being equal, the greater the yield. So we may set it down as a matter of prime importance to have a prolific queen. But there are other things of as much or even greater importance, the longevity or endurance of the workers is one of them. It is of little value to rear a large number if they die early while in the height of their labors.

We notice a great difference in the age reached by different families of mankind. Some drop out at 65 or 70, while others live on, almost every member to 80 or more years, hale and hearty. The same law appears to hold true in regard to the age of bees, as is easily shown by introducing an Italian queen into colonies of black bees; or by noticing the time a queenless colony will survive after they have lost their queen. It is generally believed among the more intelligent beekeepers that the average age of worker-bees during the summer months is about six weeks; and the time they work in the field is not far from four weeks. If workers of one colony of bees can gather honey for four weeks while the longer lived bees of another colony can go five weeks, we can readily see why the latter should prove the more productive. If the first colony should produce 60 pounds of surplus, the hive of longer lived bees should produce 75 or even more pounds of surplus honey.

There is another factor of prime importance in the discussion of this subject. It is the constitutional vigor with which the bees of a colony are endowed. It may even include longevity. Any person who has had much experience with domestic animals, and especially horses, must have noticed the great difference in their constitutional vigor and ability to stand up under adverse conditions. One horse may be driven a dozen miles and back, and when you turn it out it will kick up its heels as though it had thoroughly enjoyed the whole drive, while another after having been driven half the distance appears worn out. There is as much difference in the natural vigor of different colonies of bees as in other animal life, perhaps even more. Some colonies will go down in spite of our best endeavors to build them up, while others in apparently no better condition respond and build up with surprising rapidity. This may account for the greater distance some bees fly in search of nectar, and also for the greater productiveness of one hive over another. If the bees of one hive fly over an area whose diameter is three miles, while bees of a more vigorous colony fly over a diameter of four miles their pasturage is nearly doubled, and sometimes the surplus of their hives also. Bees often fly even farther. A friend of the writer introduced Italian bees into his apiary. There was a field of alsike clover 2½ miles from his yard. He went to see if his new breed of bees would go so far for honey, and much to his surprise found his yellow bees in great abundance; and they were several times as numerous as the black bees of a neighbor whose bees were located only a mile from the clover. The greater vigor of Italian bees accounts in a large measure for their popularity.

It is well for the apiarist to have these points in mind if he would increase the productiveness of his bees. Avoid increase from the weaker hives and plan to get the new swarms, or at least the young queens, or as many of them as possible from the strongest and most vigorous colonies, and those producing the largest amount of surplus honey.

Middlebury, Vt.



A CRANE APIARY IN VERMONT
Losses in the Crane apiaries the past winter under two percent

Translations from a Swiss Bee Paper

BY C. W. AEPPLER.

In "Der Schweizerischen Bienen-Zeitung" (Swiss Bee Journal) for December, 1916, I find the following of interest:

HONEY and wax have increased in price in Germany, but in far greater proportion than other food stuffs. It is thought that the reason for the increased price of honey is the lack of cultivated plants yielding nectar. All available land has been put into potatoes, grain, and the like, in order to meet the demands of the war, leaving only honey plants that are growing wild for the bees to secure nectar from. Even the parks, flower gardens and lawns have been plowed up and put into potatoes.

Honey is now selling for six marks per kilo in Germany, which if given in price per pound would be approximately 68 cents per pound. Wax is selling for seven marks and above per kilo, which if given in price per pound is approximately 76 cents per pound. Before the war, honey was selling for 30 to 35 cents per pound, and it is surprising that it has only doubled in price in that country. Before the war most articles of food were cheaper in Germany than in America, yet honey was selling for about three times the price that we receive.

Before the Swiss Science Association in November, 1916, Prof. Goldi presented his new theory on the sex determination of the honeybee. His theory is as follows: All eggs that are laid in drone-cells by the queen are fertilized the same as all eggs that are laid by her in worker-cells. However, after the eggs have been laid by the queen in drone-cells, the workers sterilize them.

This is the third hypothesis that has been set forth on sex determination in the case of the honeybee, and may be said to lie about midway between the hypothesis of Dzierzon and Von Dickel.

Prof. Goldi bases his theory on observations that he made with certain species of ants in Peru, South America.

Madison, Wis.

Long Distance Beekeeping

BY FRANK C. PELLETT.

THERE are hundreds of men who keep bees as a side line and with no very special importance placed on the income from the apiary. There are a few side line beemen whose colonies are numbered by hundreds. For novelty of management and profitable returns we take off our hats to I. J. Stringham, of New York city. Stringham runs a supply business in the city which requires more

or less of his attention every week in the year. With a business in the largest city in the world, one would hardly expect to find the owner a very extensive beekeeper. While beekeeping is an exacting business, in that there are a few essential operations which must be attended to at the proper time, it has certainly been demonstrated that the man who has a good working system has more freedom than with any other business giving as large returns on the capital and labor invested.

Although Mr. Stringham is engaged in business in the city, he lives in a suburban community on Long Island, and goes back and forth to his work daily. One small apiary is kept at his home. Three others are kept on the island within easy reach by automobile. He has three others along the Hudson and two more still farther north. His most distant apiaries in New York state are 210 miles apart. In spite of the long distance from home at which the apiaries are located, four of them are run for comb-honey successfully. Not being content with a string of apiaries 200 miles long, the owner has one in South Carolina which is operated with one visit each year.

Long distance beekeeping is an art. The few visits that are made must be timed so as to reach the apiary just ahead of a crisis. Every operation must be planned to make the most of the short time available for work in each yard, to get a maximum of result with a minimum of labor. Of his ten apiaries Mr. Stringham cares for eight personally, while the other two are operated on shares by the men on whose farms they are located.

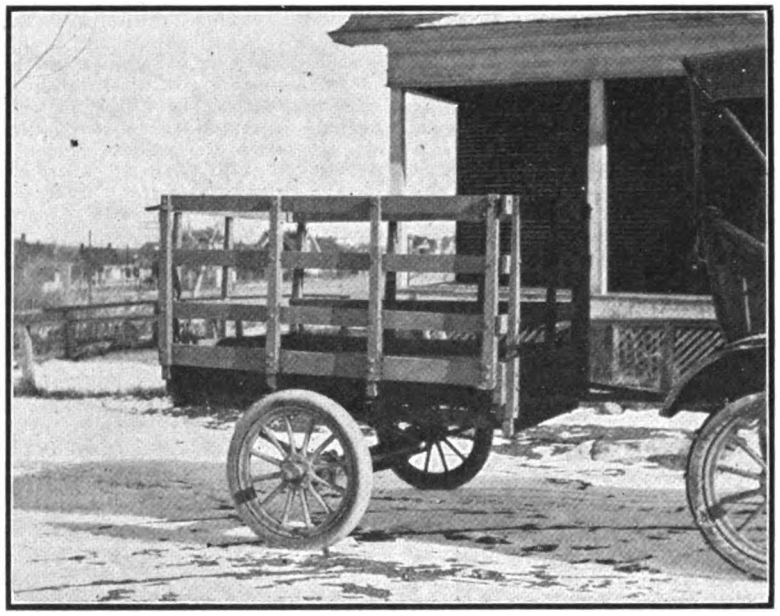
The South Carolina apiary which is operated with one visit a year is run for bees as well as for honey. Each colony has three stories of extracting combs to which the bees have access through the entire year. The one visit is made at the beginning of the swarming season and most of the bees from every colony are shaken into packages for shipping north for the purpose of making increase, strengthening weak colonies or for sale in pound packages. In this way several hundred pounds of bees are secured each year. Being so much further south than the New York yards the colonies are strong at a time when bees are just beginning to build up in the northern states. After the bees are removed all surplus honey that may have been stored after the visit of the previous year is extracted. When he is ready to leave there is an abundance of room, and since the working force has been removed, there will not be further danger of swarming. The bees usually build up again in time for the fall flow and store a considerable quantity of honey which will be extracted at the time of the next spring visit. Even with this let alone plan the bees store enough honey to pay expenses of the long journey south and shipping the bees north again, so that the owner nets about five pounds of bees per colony, which makes it a very profitable apiary.

Six or seven visits each year are paid to the New York apiaries. A light automobile makes it possible to reach any of these apiaries with a load of supers within a few hours' time. It is only possible to care for so many in this manner, in addition to other business, by having all comb-honey supers ready in advance. Sections are folded and filled with foundation during the winter months. When the comb-honey apiaries are visited during the honey flow, carriers full of empty sections are taken to the yard, the filled sections taken from the hives and exchanged for the empty ones, and the return trip is made with the carrier full of finished sections. Every possible short cut is practiced.

Outyards for comb-honey production are not common, because of the great difficulty of controlling swarming under such conditions. When the first signs of preparation for swarming are noticed in the Stringham yards, a queen excluder is placed between the bottom-board and the body of each hive. This prevents the escape of the queens during the absence of the owner. Neighbors who have hived swarms issuing from these apiaries have been much mystified because they return to the parent colonies instead of remaining in the new hives or boxes in which they are caught. Two weeks after the excluders are placed, every colony which has queencells is shaken and in due time the brood is returned to it. This plan effectively disposes of the swarming problem in most instances. An occasional swarm will be lost, but the number is not large.

The colonies run for extracted honey are given the usual attention, since swarming is a much less serious problem with the extracted honey system. With more than 700 colonies managed in this way, the net returns have averaged better than $5 per colony for a series of years. Mr. Stringham is not new at the business, having kept bees on a commercial scale for 25 years. Locust is an important source of surplus to the bees on Long Island. The flow usually lasts from five to seven days. Often 30 to 40 pounds of surplus per colony is stored from this source alone. The flow can be depended upon in this locality four years in five.

In order to succeed with a system like this, one must be thoroughly familiar with the essentials of honey production, for a novice would almost certainly fail with such a plan. The returns which Mr. Stringham has secured from so many bees over a long series of years effectually demonstrate that it is not necessary to be forever fooling with the bees in order to get results. If the operator knows what to do and when to do it, the less fussing the rest of the year the better.



TRAILER OF WESLEY FOSTER ATTACHED TO FORD AUTOMOBILE

As a means of advertising, Mr. Stringham exhibits at the Madison Square Garden Poultry Show in New York, and at the Boston Poultry Show. These are the two largest poultry shows in America, and thousands of people are in daily attendance. He tried exhibiting at many of the smaller shows, but finally decided to appear at only the two best ones, where he could reach the largest possible number of people. Booth space at the New York show costs $75, so he has little competition in the way of rival exhibits. It is an advertising proposition entirely, since no prizes are offered for anything aside from poultry. It was at the New York show that I met Mr. Stringham The first time I passed

through the big building I was attracted to the honey exhibit, which was very nicely arranged. There was a constant stream of visitors to the honey booth, many of whom bought honey to carry away with them, and many others left orders for later delivery. Since there was no other exhibit of bees and honey, most of the visitors to the show stopped to take a look. By such means a retail trade for a large amount of honey is established, which adds a substantial sum to the income from the apiaries.

Alsike Clover as a Honey Plant

BY C. H. PAMMEL.

AT the recent meeting of the Iowa beekeepers in Des Moines, the writer made the statement that alsike clover was somewhat overestimated as a honey plant, at least so far as Iowa was concerned. It is not an important honey forage plant in Iowa. The acreage is relatively small. There are a great many spontaneous plants of it in Iowa, however. But there are much larger areas in Wisconsin, where the soil and climate are adapted to it. It is also perhaps a much more important honey plant in that region than with us. After my return home I looked up our records on its value as a honey plant. I find that it is not visited as frequently as sweet or white clover. The following field notes were made by Dr. L. A. Kenoyer. These notes will be of interest in view of the discussion in Des Moines:

TRIFOLIUM HYBRIDUM—ALSIKE CLOVER.

Date	Place	Weather	Honey bees	Other insects	Observer
6-16-14	Campus	Clear, cool SE	Fewer than on white	Numerous	Fazier
6-17	Street	" " "	Many	"	"
6-18	"	" warm 70 deg.	A few after 7:30		Munger
6-19	"	Cloudy, cool N	None		"
....	"	Moderate, S	Plentiful	Andrena plentiful	"
1915	Campus	Cool, wet summer	Bees rarely observed on alsike		Kenoyer

Although our observations indicate that alsike is less visited by bees than is white clover, its corollas are but slightly inferior to those of white clover in the amount of sugar contained.

The insect visitors are very similar in kind to those of white clover, flies and hemiptera being frequent.

Alsike differs from white clover in having ascending rather than prostrate stems, and in the generally more decided pink tint of the flowers which may be distinguished also by the absence of the purple spots at the sinuses of the calyx—these spots being characteristic of white clover.

Ames, Iowa.

[Alsike clover is found quite frequently growing in pastures in the East, New York and New England. It has become a volunteer there as white clover is with us. The beekeepers of the East and Canada secure much honey from it.—EDITOR.]

BEE-KEEPING FOR WOMEN

Conducted by MISS EMMA M. WILSON, Marengo, Ill.

Queen-Rearing

I want to know the best method of rearing queens for my own use. I live on the farm. I have had some experience with bees, but have never had any with queen-rearing.

I have five colonies in 10-frame hives, two in eight, and three in log hives. I want to transfer my bees in log hives and requeen them. My bees in the hives are 3-banded Italians, and those in the log hives are blacks. I left on a super full of honeydew and amber mixed. They had some honey in the brood-chamber, but I do not know whether they had enough to winter on. Did I do right?

[MRS.] W. B. ROBINSON, SR.

Defeated, Tenn.

So much depends upon the queen that it pays well to take a great deal of pains to rear the very best. At least up to the time when a queen-cell is sealed it should be in a strong colony, and the colony should be in the pink of condition, with abundance of honey coming in, so that the royal larvæ shall be lavishly fed. Don't try to rear queens too early. They are likely to be poor. Wait until the time when bees swarm naturally. Indeed, one of the best ways is to use what are called swarming-cells, that is the cells that are reared for swarming.

Decide which you think is your best queen, or at least one of the best, and and if its colony is not likely to swarm among the earliest, strengthen the colony by giving it brood and bees from other colonies. Then as soon as it swarms and you have hived the swarm you can divide into nuclei the brood and bees that are left in the old hive, giving each nucleus two or three frames of brood with adhering bees. Make sure that each nucleus has at least one queen-cell in the central part between the frames where there is no possible chance that it may be chilled. Generally you will find queen-cells on the edges of combs, but for your purpose that is not so well. If there is no cell where you want it, cut one out and put it there, giving preference to the larger cells and those with the deepest indentations. Fasten the cell on the comb with a hive-staple, or any staple with legs 1½ inches or so apart. Let one leg of the staple hug down upon the cell, and push the other end into the comb. In about two weeks look in your nucleus, and if all is going well you ought to find a young queen laying.

It was all right for the bees to have the honey left for them, except that in some cases, if not generally, honeydew is not the best for winter stores. But if the honey was in sections, although good for the bees the sections would not be good to use again.

A Beginner

Will you please give me some information on how to care for bees. I want to know enough to keep them.

Gravity, Iowa. ETHEL V. RAY.

The care of bees is the same whether you desire to produce honey for market or for your own use, just as you would raise potatoes the same way whether you intend to eat them or sell them.

It is an impossibility in a single reply to tell all about the care of bees. There are, however, good books written purposely to give the instruction you desire, such as "Dadant's Langstroth" and Root's "A B C and X Y Z."

Perhaps you can hardly do better than to send $1.75 to Dadant & Sons, Hamilton, Ill., to get the American Bee Journal for a year and with it Dr. Miller's "Thousand Answers." This book contains the cream of the replies given by Dr. C. C. Miller during many years to all sorts of questions about bees, questions asked largely by beginners, yet many by those with experience, so that you will hardly fail to find in it the answer to any question that may come up in your work.

You may, however, not think it worth while to go to even that much expense. Well, then, about as soon as you see the first clover blossom, seeing you are in a white-clover region, put some kind of a box on your hive to contain the surplus honey; be on the lookout for swarms so as to hive them, take off the box as soon as the honey in it is sealed, and put on another box, and as soon as the bees stop gathering in the fall take off all boxes.

That is exceedingly meager and unsatisfactory, and it would still be meager and unsatisfactory if another page were added to it, or even a dozen pages. On the whole, the likelihood is that if you should make the small outlay suggested you might more than get it back in a single season with a single colony.

A Unique Institution

The School of Horticulture for Women, located at Ambler, Penn., is unlike any other institution in this country. A two-year course is offered and all students entering are required

to take a medical examination to show physical fitness as well as suitable mental preparation. The course is said to be too strenuous for delicate women. As will be seen from the picture of the class in beekeeping, the students are given practical work in the subjects which they are taught. Two hours of practical work to one of books is the rule throughout the course.

The work includes floriculture and greenhouse management, landscape gardening, fruit growing, vegetable gardening, poultry keeping, beekeeping, canning and preserving. In many respects the work resembles that offered in the Agricultural Colleges, excepting that here the students have practical experience in the apiary, greenhouse or garden through the entire year. The jam kitchen is an interesting place where the products of the school farm are prepared for market. Fruits are made into jellies and preserves, and the honey is bottled for a special trade. While there are similar institutions in Europe, there is no other school in America offering this particular training for women.

Miss Elizabeth Leighton Lee, director of the school, says: "The object of the School of Horticulture is to give to educated women scientific instruction, combined with all necessary conditions for much actual practice; the course being planned to equip women with the theoretical and practical knowledge that will enable them to manage private and commercial gardens or orchards. Thorough training throughout the various seasons of the year eliminates the discouragements of costly inexperience, and fits a woman for a vocation that is healthful, attractive and remunerative." F. C. P.

One who has any proper conception of the subject cannot help being thrilled to think what it will mean to the country when schools of this kind become common—as they surely will. A woman who has been through a two-year course at Ambler need have little to fear in meeting life's struggle if she should be thrown upon her own resources.

Yet important as it is that those women who live lives of single blessedness shall be prepared to steer their lone barks, it is of vastly more consequence that married women shall do their part well, if for no other reason than because there are so many more of them. It is a great thing to be a *home-maker*. Lillian Russell, the noted opera-singer and actress, lately wrote in the Chicago Daily Herald:

"Women who are making good homes need not feel that their work is insignificant; they are engaged in the greatest work life offers. Their sisters may paint beautiful pictures, write wonderful stories or rise to exalted positions in business or the professions; but the home builder is, after all, the greatest producer of beauty and happiness. All else in life is in a large measure dependent upon her. Government may fall and religion may totter if she fails in her duties.

"Women who create beautiful homes can find time for other things; their lives need not be narrow. Many channels to success in other directions are open to them. They have a better chance to reach exalted positions in their communities and nations than the women who have never felt the wonderful exhilaration and inspiration of the home builder.

"Man may erect a building, but it takes a woman to make it a home. It is a woman that puts the wonderful sweetness in the word home. She is the creator of the beauty and happiness that convert a dwelling place into a home."

So let us rejoice that Ambler women are being prepared to make better homes, and that the vision is broad enough to include beekeeping as one of the things the home-maker may well know something about.

MISCELLANEOUS NEWS ITEMS

Suggestions for the Control of Foulbrood.—The following gleaned from the instruction given by B. F. Kindig, State Inspector of Michigan, is worthy of attention:

Very few colonies of bees *actually die* from foulbrood during the summer. The disease causes the colonies to become very weak, and they, therefore, store up very little food for winter. If they do not starve to death sooner, or are not killed by robbers, the first real cold weather usually kills them. These conditions cause many beekeepers to look upon the death of their bees as purely due to winter killing. In a large measure winter killing is due to disease.

From now on until late spring, every beekeeper should look upon the death of any colony with suspicion, watch the hives on warm days, and if the bees are flying from some hives and not from others, take the hive from which the bees are flying, inside of a building and there make an examination of the interior. If the colony is found to be dead or nearly so, do not again place the hive where it can be robbed, but suffocate the bees and close the hive securely. Any colony that is being robbed may be a source of disease, which disease may be carried to all the healthy colonies in the vicinity.

Any beekeeper who is not familiar with the appearance of combs in which disease is present should send a piece of the comb under suspicion. A box for mailing will be furnished, if desired. No charges are made for the examination of the comb. If disease is found to be present, specific directions for disposing of the combs, and for treating the disease in living colonies, will be sent to the person sending in the combs for examination.

If beekeepers will heed the above suggestions, it will prevent in large measure the further spread of foulbrood. E. F. PHILLIPS,
Bureau of Entomology, Washington, D. C.

Ohio Beekeepers Meet.—At the meeting of the Ohio Beekeepers' Association the following officers were elected: President, Melville Hayes, Wilmington: Vice-president, Fred Leininger, Delphos; Secretary-Treasury, Ernest Kohn, Grover Hill.

A field meet will be held at Wilmington the latter part of August.

Western Washington Meeting.—Success attended the annual convention of the Western Washington Beekeepers' Association held in Chehalis Feb. 9. Southwest Washington was well represented.

N. P. Welson, of Centralia, was elected President, and W. L. Cox, of Elma, was re-elected Secretary-Treasurer.

THE STUDENTS ARE GIVEN PRACTICAL INSTRUCTION IN THE SCHOOL OF HORTICULTURE

N. B. Coffman welcomed the delegates to the city and made a short talk on the bee business as a profitable enterprise.

Dr. J. T. Coleman, whose subject was "The Value of Bees to the Agriculturist," explained that the bee business required a great deal of painstaking work. He also pointed out that the little honeybee is the principal agent in cross-pollinating flowers. Dr. Coleman is part owner in a 48-acre pear orchard.

A. S. Cory made a talk on the "Commercial Value of Bees," and urged the beekeepers to improve their stock as well as their product.

W. L. Cox, of Elma, spoke on "Marketing Honey," of which he sells several tons each year, nearly all in his own county, direct to the grocers. He does all of his own delivering with a Ford car; he has a pennant across the wind shield reading, "Eat Honey." This pennant has led to the sale of several cases of honey.

J. W. Ware, the Experiment Station bee-man, addressed both afternoon and evening sessions. Mr. Ware is a beekeeper of many years experience, and gave those present the benefit of his successes as well as his failures.

W. L. Cox, *Sec.*

The Arkansas Valley Beekeepers' Association will hold its spring field meet at Nickerson, Kan., May 12. Every effort will be made to make this meeting a good live one.

J. L. Pelham, *Sec.*

Death of a Texas Beekeeper.—M. M. Faust, of Wilson Co., Tex., one of the best known beekeepers in the State, died in San Antonio Feb. 21, aged 80 years. He was born in Mississippi, and was for over 30 years identified with the bee business of Texas, having acted for many years as foulbrood inspector for Wilson county, and did more perhaps than any other man in the State to lead in the fight for the eradication of this scourge.

Mr. Faust was always a large beekeeper himself, and was among the first to adopt and advocate new methods of bee-culture. Early in the history of Texas beekeeping he imported and bred Italian queens and induced his neighbors to assist in driving out the inferior native races.

E. G. Lestourgeon.

The Late M. M. Faust, of Texas, with His Little Grandson.

Toronto Field Day.—The 6th annual Field Day of the Toronto Beekeepers' Association will be held at Guelph on May 24. The object of these field days is to educate the beekeeper by practical demonstration in the apiary to better and improved methods of beekeeping. The Field Day demonstration for this purpose is ideal.

Under the splendid management of the Provincial Apiarist, the Ontario Agricultural College is taking the lead in things apicultural. It goes without saying that the program will be first-class. Mr. Pettit with wide experience in such matters is in charge of this department, and we are confident all who are fortunate enough to be present will go away delighted.

G. R. Chapman, *Pres.*
P. Temple, } *Sec'ies*
C. V. Clubb, }

An Advertising Idea. — During the coming summer I shall try out this idea. I shall have some friend in another State to remail me a letter envelope addressed as follows:

BONNEY HONEY
Dr. Bonney—King Bee

The mail clerk supplying the right address will receive a can of Bonney honey as a free gift. Iowa.

That is all. Is it a good idea? Go thou and do likewise. Dr. Bonney.

Dr. Miller's Answers

Send Questions either to the office of the American Bee Journal or direct to Dr. C. C. Miller, Marengo, Ill. He does NOT answer bee-keeping questions by mail.

Trouble With Bee-Moth

How can I get rid of the bee-moth?
Oklahoma.

Answer.—You will have no serious trouble with the bee-moth if you will keep Italian bees and have your colonies strong. Even blacks or hybrids, if strong, are not likely to be much troubled.

Unripened Honey

1. What causes honey to flow from the hive late in the fall and winter, and what can I do for it?
2. Which is better to use, the 8 or 10 frame hive? Minnesota.

Answers.—1. It often happens that moisture from the bees condenses on the walls of the hive and runs out at the entrances, and this may have been what you observed. It is possible, however, that there may have been some thin, unsealed honey that ran out of the cells. Try to have well ripened honey for winter, and see that hives are well packed.

2. In most cases the larger hive is the better.

Transferring Bees by the Pound—Bees' Wings Injured

1. I have 11 colonies, two are in old log gums. I want to take them out in the spring. My bees are mostly the leather-colored Italians. Would you advise transferring bees from old log gums before they swarm or after?

2 Would it be advisable to order bees by the pound in this part of the State, and will the 1-pound package increase to good colonies during the summer?

3. Just after bringing home a swarm of bees in an old log, some bees began to come out and fall down on the ground. Some would have both wings off while others would have one wing off; some with the ends of the wings off. The bees looked as if they had been scorched; they seemed to be healthy in every other way. What do you think the trouble was? Virginia.

Answers.—1. The tendency nowadays is to wait until they swarm, hive the swarm in a proper hive, set it on the old stand with the old hive close beside it, and 21 days later, when all worker-brood has emerged, break up the old hive.

2. Much depends upon what you can do in the way of buying near by in full colonies. If you can buy them for less than $5.00, that may be better than to get bees by the pound. If you have to send off, then buying by the pound is likely the best thing, preferably getting a queen with your pound. It's asking a good deal to have a pound build up to a strong colony, but if the year is favorable you may compass it. On the whole, however, it may pay full better to get a 2-pound package. It ought to build up more surely in a poorer season, and in a good season build up in less than half the time, and in a very good season it might give enough surplus to more than pay for the extra pound.

3. I should say they might have been scorched, if there was any chance for that; otherwise it might be that the larvæ of the bee-moth may have gnawed off their wings while they were in the cell.

Swarm Prevention—Ventilation

1. I now have five colonies and one good Italian queen. How would it work to wait until they are preparing to swarm, then kill the old queen and cut out all cells but one, fill that with royal jelly and put a larva from my best queen in it, and then keep all cells cut out but that one? Would that prevent swarming or would it leave them queenless too long?

2. Is it a good plan to put in one-inch blocks under the corners of hives in hot weather, leaving one-inch space all around, or would it be better to have an opening only in front?

3. Would it be a good idea to raise the cover about 1-16 inch all around?

4. I have five supers full of partly drawn combs and a little honey. Would it be a good plan to put them on in fruit bloom and leave them until the clover comes, or should I wait until the brood-frames are all filled?
Subscriber.

Answers.—Your plan may work all right,

but you will need to watch closely or the bees will start cells in places you will miss. You will not need to fill a cell with royal jelly; merely pick out the larva and put in the other larva. It may be well for you to prepare several cells, for fear the bees destroy the larvæ, then before the cells are sealed destroy all but one of the accepted cells. No swarming ought to result; and the interim without a laying queen would be increased about ten days.

2. The opening all around gives better ventilation than the opening in front, but it is somewhat unpleasant to work at a hive where the bees can come out at the side.

3. Yes, only so small a space would in many places be filled with glue, especially late in the season.

4. It will be all right if the colonies are strong and the supers contain extracting combs, but not if they contain sections.

Bees and Other Pursuits—Bees in Buildings—Clover Seed

1. What crops or rural pursuits fit in with bee-culture without interfering with care of bees?
2. When a second story of building is used for bees *can the colonies be set about the room as when out-of-doors*, only facing windows, or must each have a separate outlet?
3. Is raising clover for seed a profitable and sure crop? What kinds should be sown, taking bees into the plan?
4. What kinds of annual bee-forage plants are best which yield a crop of its own?
5. How best to construct an inlet through building for bees? WISCONSIN.

ANSWERS.—1. Small fruits and poultry fit in well with bees.

2. Each colony must have its own outlet.

3. In some places it is, in some places not.

4. Sweet clover, alsike clover, and raspberries are among the best.

5. The simplest kind of a passage made with plain boards.

Miscellaneous

1. Is there any profit to be made in a strong colony of bees in a box-hive at 50 cents per colony, to unite with bees in patent hives?
2. Do you think beekeeping could be made a success in this country, as we have some white clover, goldenrod, white aster, black locust, Spanish-needle, and some few other nectar yielding flowers?
3. How much cheaper can a man produce extracted honey than comb? KENTUCKY.

ANSWERS.—1. I can hardly think of any case in which a strong colony of bees in a box-hive would not be a bargain at 50 cents, no matter which way you would use it.

2. Yes, indeed, I have no doubt you can make it a fine success.

3. Estimates vary. Some say you can produce twice as much extracted as comb with the same outlay, some say very little more. Generally, it is believed, that 50 percent more can be produced.

Division-Board—Linn Trees—Clover

1. What is the use of the division-board in the 8-frame hive?
2. Should it be put in the middle of the hive?
3. Are the linn trees very good honey trees?
4. How much honey will one tree yield?
5. Would sweet clover planted along the roads and ditches be much of a benefit to bees? IOWA.

ANSWERS.—1. The principal use of the dummy, sometimes called the division-board is to make it easier to lift out the frames.

2. It should be at one side of the hive, although in hot weather it works all right in the middle of the hive.

3. The linden or linn is the same as the basswood, one of the very best honey-trees that grow.

4. I don't know; a big ree yields more than a little one. I have seen it estimated that a large tree would yield all a strong colony could gather. I have my doubts.

5. Yes; it often blooms when little else is to be had, and is then of great value.

A Start With Nuclei

1. How can I put a two-frame nucleus with a queen into an empty hive?
2. Will it make a swarm large enough for a hive?
3. Where can I get a book on bees that would contain such information for the above question?
4. Would bees shipped from southern Texas do all right here?
5. Would a 2-pound package of bees with a queen be sufficient bees for an empty hive?
6. How should they be put in?
7. In running for comb honey, should each frame have a starter? NEBRASKA.

ANSWERS.—1. I simply lift the frames out of the nucleus hive and set them in the hive. A few bees are likely to remain in the nucleus hive, and these you can brush in front of the hive, or else set the nucleus hive in front of the hive and let the bees run in.

2. If the season is good enough, a 2-frame nucleus started sufficiently early ought to make a good colony for winter. In a poor season, hardly.

3. Send for prices on bee books to the Bee Journal. That is an encouraging question, for a man who has no book to guide him is likely to make a lot of rather expensive blunders in keeping bees. I am not anxious to interfere with the circulation of the American Bee Journal, but I would not advise any one to subscribe for it instead of buying a book. After the book, then a good bee journal is a great help.

4. Yes.

Yes, if the season is good enough and long enough.

6. It doesn't matter how, so you get them into the hive. You may jar them into the hive, or you may set the package inside the hive, trusting the bees to come out and crawl upon the combs or frames, provided you can furnish them a frame of brood, which you may remove a day or two later if you wish.

7. Yes, and it is costly business to furnish a starter only, for if the frames are not entirely filled with foundation so much drone-comb will be built that it will make you considerably short on honey.

Buying Bees by the Pound With a Queen—Wintering, Etc.

1. I subscribed for the American Bee Journal and a queen for $1.60. If I order a pound of bees from Dadant & Sons, could the queen from the Bee Journal be sent with this pound of bees?
2. I have six drawn combs with some sealed and some unsealed honey for the other four frames. I shall use full sheets of foundation for starters. Will one pound of bees build up a strong colony on this?
3. I winter my bees outdoors, two colonies in a box, with heavy roof paper all around the box and six inches of leaves for packing all around the hives, with one square inch entrances. Is this the best way to winter bees outdoors?
4. Today many bees are flying, and some drop on the snow and die. Can this be prevented?
5. I have four colonies and do not want to increase. If a colony should swarm and I hive the swarm in a new hive and put the parent colony with it, would it be liable to swarm again? IOWA.

ANSWERS.—1. Yes; and it's a very nice way to get the queen, avoiding the risk of introduction.

2. That depends. If obtained about the time of fruit-bloom, in an extra season, you may have a strong colony for winter. If the season should be very poor, it may need feeding to get them ready.

3. Your plan is good, and if your bees have wintered successfully in that way it is not worth while to look for anything better.

4. Toward spring some bees are always dying off from old age, and it is possible that only these aged bees are flying out. Sometimes, however, younger bees are lured out by the bright sun when snow is on the ground, and fall into it. You may prevent this by shading the entrance with a board.

5. If you unite the old colony with the swarm, giving the brood also, they'll swarm. If you give only the bees, without the brood, they'll not swarm.

How to Keep Queen Alive Without Bees

I have been trying to find in Langstroth's book or in American Bee Journal how to keep several queens by themselves during summer or over winter. I have lost several colonies this winter of which the queens were most important. I have also tried the experiment, and expect to continue trying, to keep queens between seasons in separate apartments, and to give some occasionally a needed rest to recuperate and increase life and vitality. Can it be done, and how?

ANSWER.—If you are successful in your experiments in keeping queens over winter without having each queen kept in a colony or nucleus of its own, you will be putting the fraternity under obligation by making known how it is done. The best I can offer is to keep the queen in a nucleus in a hive with a full colony, a bee-tight partition between the colony and the nucleus, or else two or more nuclei in the same hive.

In summer it is easier. A queen may be kept in a provisioned cage with a dozen bees in a warm place or over a colony for a number of days, perhaps two or three weeks. Several queens may be kept in separate cages in a queenless colony, and with more or less success in or over supers of queen-right colonies. When I have a valuable queen whose life I wish to prolong, I prefer to keep her in a nucleus where she may continue laying lightly.

Photos on Title Page—Swarming

1. Whose picture is represented on the left and whose on the right of the monogram just above the opening page on bee topics of the Bee Journal?
2. Last summer I had a swarm that settled close by on a tree. I removed the parent colony to a new stand and inserted a new one in place of it, as is the usual custom, and hived the swarm. I then placed the super above them which they had on before they swarmed, and at the bottom they had full sheets of foundation. Five minutes after I could see the field bees going in as if nothing had happened. The sweet clover was just coming into bloom, and this hive was full of bees and the prospects fine.

About three weeks after this I noticed the bees all swarming out of the hive again; they circled about for ten minutes and finally lighted on that same tree. I presume they were clustered in that tree about 15 minutes, when all of a sudden I saw them returning one by one to the hive, until the whole swarm was back. That was a puzzle to me, but I didn't molest them, as they began working the same as ever. About three weeks later I noticed they were taking it easy while bees in other hives were carrying heavy pollen morning and evening.

I concluded something was wrong and that wrong must have happened the day they swarmed for the second time. In opening the super I was astonished to see nothing but drone cells bulging out, and on examining the brood-chamber there wasn't a cell built in the foundation. Seeing it was too late to give the brood to rear a queen, I united them with one of the other colonies. What became of the queen and why was the brood-chamber left empty? ST LOUIS.

ANSWERS.—1. On the title page of the American Bee Journal the man at the left is Rev. L. L. Langstroth, the inventor of the movable-frame hive. At the right is Charles Dadant, who did a great deal of good by introducing and championing the movable-frame hive in France, as well as by rearing a son, C. P. Dadant, who has turned out to

be the best.....Hold on, Doctor! Can't afford to publish the rest of that!—C. P. D.

2. The trouble began when you gave that super to the swarm. That looked better to the bees than the foundation in the brood-chamber, so they went right up and began housekeeping there. Next time either put a queen-excluder between the brood-chamber and the super, or else don't give the super to the swarm until the queen has made a fair start at laying below, say three days or more.

Large or Small Hives?—Swarming

1. I would like some information on bees. A few friends of mine take three, and sometimes as high as six, brood-chambers and stack up on each other, but I cannot see any advantage doing that way. If there is I would like to know it.

2. I use the 8-frame brood-chamber, 12 inches deep, but most of them are 9⅛ and 10 inches. Which is the best?

3. Would you get a larger swarm from a 12-inch hive than you would from a 9⅛ or 10 inch in swarming time?

4. I have a few small brood chambers, and as a rule they swarm two or three times during the summer season until they are weak. Can I put on an extra super, take the swarm and queen away and put them back in the same hive, or will they stay, as the swarm is very small? ILLINOIS.

ANSWERS.—1. In working for section honey you will find it the case in a good season that the bees will be working in 3, 4, and even up to 8 supers before all the sections are sealed in the first super. It is somewhat the same way with extracting supers, and some of our best beekeepers leave all on until the close of the harvest.

2. The larger hive may be the better.

3. The larger hive is likely to give the larger swarm.

4. After they have swarmed it will not work to give them an extra super and return the swarm; they will swarm out again. Still, if you keep returning the swarm each time it issues, after a week or so only one young queen will be left in the hive, and then they will swarm no more.

Repairing Combs—Danzenbaker Hives

1. I have some brood-combs that the mice got into and chewed holes in the center of the combs; some are clear through while others are only as far as the midrib. Will it be all right to use them in the brood-chamber this spring?

2. Will you tell me the real need of having a bottom-board, one side being deeper than the other?

3. When my new hives arrived, I found that after I had put them together I had some pieces left; they are a little more than ¾ of an inch wide by ⅛ inch thick; some are 16⅛ inches long and others 18⅛ inches long. What are they for? I purchased Danzenbaker hives.

4. Do you consider the Danzenbaker hive a practical hive, or had I better get the regular Langstroth on the start and save the changing later. NEW YORK.

ANSWERS.—1. It will be all right to use them, only you should know that wherever the midrib is gnawed away the bees will be pretty sure to build drone-comb. You can prevent this by using one or more of the combs to cut up into patches to fit in the holes. Or, you can fit foundation into the holes. Let the foundation be ⅛ or ¼ inch larger than the hole, cut away the cells down to the midrib on one side, have the foundation quite warm and soft, and press it down into place.

2. I invented the reversible bottom-board although sometimes another name has been attached to it; my object was to have a deep space in winter that would not be clogged by dead bees, and a shallower space in summer, so the bees would not build down. But I have not used the reversible bottom-board for years, preferring a bottom-board two inches deep for the year around, using a bottom-rack in summer to prevent the bees from building down.

3. I don't know; perhaps to fill the spaces to prevent the bees getting in behind the frames.

4. I think most beekeepers will agree with me in preferring the Langstroth.

Laying Worker

I looked over my bees to find how they had wintered, and found that my best colony had brood in one frame of the super, although there was plenty of room in the brood-chamber.

This brood was raised and capped like drone-brood, but was in worker-size cells. One cell had three eggs in it. What is the cause of this? SUBSCRIBER.

ANSWER.—It is either a case of laying workers or a drone-laying queen, and the three eggs in a cell looks like laying workers. Anyhow, if there is no normal worker-brood in the hive, the case is hopeless, and the best thing is to unite the colony with another, preferably a weak colony with a good queen, yet there is a danger that bees with laying workers may antagonize the queen, so the safer way will be to distribute the combs and bees to several colonies. They are probably of little value, being old.

Keep Grass Down—Queen Rearing—Queen Introduction

1. I am thinking of covering the ground with several inches of soft coal cinders where I place my bees in summer, and stamp it down smooth and hard to keep the grass from growing. Do you think there would be anything objectionable about it?

2. I have never had any experience with queen-rearing, and would like to try my hand at it another summer for my own yard. What plan do you think best for me to follow in this location—I have 65 colonies?

3. How long is it necessary to have a colony queenless before it is safe to give them a laying queen or a ripe queen-cell? WISCONSIN.

ANSWERS.—1. I know of no objection, but think the idea a fine one.

2. That's too big a subject to tackle in this department, which is only intended to supplement, but not to take the place of, a book of instruction. Beside what you will find in your bee-book, you can find a whole book upon the subject, "Doolittle's Queen Rearing;" and if you care to know how I rear queens, you will find it fully given in my book, "Fifty Years Among the Bees."

3 There is generally some risk about introducing queens, no matter how long the colony has been queenless. Indeed, after the colony has been queenless a long time there is more risk than after the first few days. The queen is generally put in an introducing cage, and the cage may be given immediately upon the removal of the old queen, the bees eating the candy and releasing the queen within a day or so, but it is perhaps safer to wait a day or so before putting the cage in the hive. It may be still better to give the cage as soon as the old queen is taken away, but keep her fastened for a time, planning to have the bees free her not sooner than three days or more.

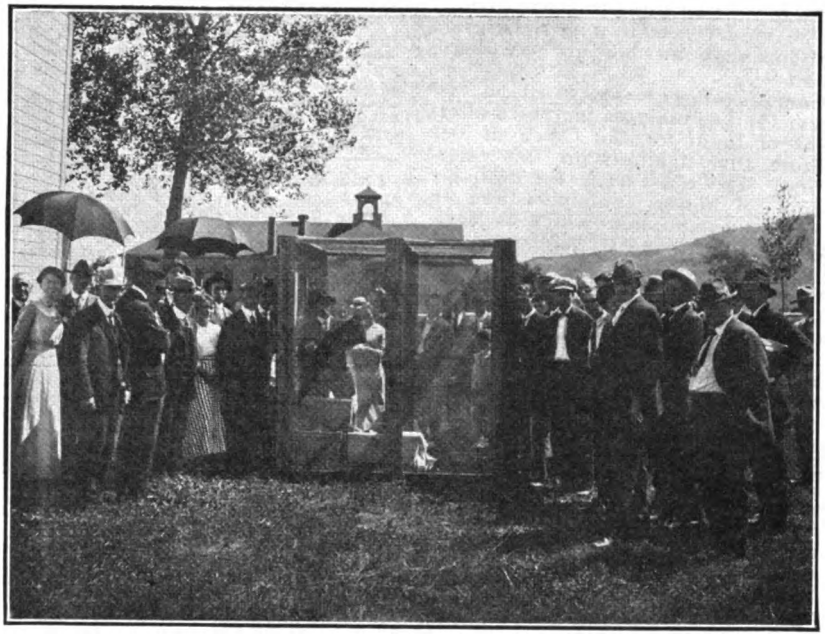
Extractor—Giving Bees Old Combs

1. I keep 12 to 15 colonies of bees, and wish to know if it would pay me to have an extractor? I have the protection double-walled hive, and use a super that takes both the 4x5 section and shallow extracting frame nicely, and I use both, too.

2. I have some brood-frames whose combs have been partly destroyed by moths, and I wish to know how best to use these. Shall I put them into use and take the chances on drone-comb, or cut out the remnants of comb, and put in full sheets of foundation? ILLINOIS.

ANSWERS.—1. It would probably pay to have an extractor for a less number than 12, unless you produce comb honey exclusively

2. If a frame is less than half occupied with worker-comb, cut out all and fill anew with foundation; if it has not very many holes or patches of drone-comb, fill up these places with patches of worker-comb or foundation.



THIS IS THE TIME FOR OPEN AIR DEMONSTRATIONS—HENRY BEHRENS, OF SOUTH DAKOTA, HANDLING BEES FOR VISITORS AT A FAIR

Dividing—Good Bee-Book

1. I am a beginner in beekeeping, and the thing that bothers me is how to divide my colonies instead of letting them swarm. In the March number of the American Bee Journal, in answering a question of how to divide you say, "Take from a colony all but one of its frames of brood with adhering bees, put them in a new hive on a new stand, leaving the queen on the old stand with the

one frame of brood, and fill up each hive with frames filled with foundation." That leaves the new colony without a queen. How are they to be supplied with a queen?

2. You mention a good bee-book, Dadant-Langstroth. Where can I get this book and what is the price?

3. How can I tell when a colony is ready to be divided? COLORADO.

ANSWERS.—1. You can give the queenless bees on the new stand a queen, or you can give them a ripe queen-cell—a queen-cell from which the queen will emerge in a day or so—or you can leave them to themselves and they will rear a queen.

2. You can get the book from the office of the American Bee Journal The price is $1 50, or with the American Bee Journal one year, $2.00.

3. You will be pretty safe to divide about the time the bees in your locality begin to swarm naturally, and don't divide them until a colony is strong, having brood in at least six frames.

SPECIAL NOTICE

THE NATIONAL CONFERENCE ON HONEY PRODUCTION

WE call the attention of our readers to the appeals to the beekeepers in these columns for a strenuous effort in honey production and food conservation. A call was made for the consideration of these matters at Washington April 23. The bee editors, teachers, extension workers and supply manufacturers were invited to this meeting on short notice.

The conference drew up a series of recommendations which are given herewith.

Committees were appointed as follows: (1) To obtain an increased allotment of funds for the Office of Bee Culture Investigations for this emergency; (2) To ascertain the available supply of honey containers and to urge the commission which is dealing with this general subject to include honey containers in their plans; (3) To learn what markets are available for exports of honey; (4) To ascertain the supply of paper containers, in case tin or glass cannot be had; (5) To request the postal authorities to permit the mailing of combless packages of bees. These committees began work promptly on the following morning and their reports will be issued as quickly as possible. The Office of Bee Culture Investigations was requested to notify Texas beekeepers of the shortage of bees in parts of the Northwest. Since prospects are poor in Texas it was suggested that many beekeepers could advantageously sell bees to beekeepers in the Northwest.

The meeting also passed the following resolutions addressed to the Secretary of Agriculture concerning the possible increase of honey production:

1. People who have *no land* may keep bees and produce 50 to 100 pounds of honey from each colony. Thousands are ready to start.

2. The present production of 300,000,000 pounds *must be increased* at once by at least 100,000,000 pounds to fill the demand, and to five times as much as soon as facilities are available.

3. Every pound of honey (carbohydrate) produced will release one pound of butter or sugar for other purposes of food.

4. With a prospective shortage of sugar a large production of honey is imperative.

5. To bring the 800,000 existing and many more prospective beekeepers to the highest point of efficiency, we ask for the Bureau of Entomology, Division of Bee Culture, a reasonable sum out of the emergency appropriation of $25,000,000 for the Department of Agriculture. To enable them to extend their work at once in every State of the Union, it would require an appropriation of 4 percent or $100,000.

(Signed)

FRANGIS JAGER,
President National Beekeepers' Assn.

G. E. BACON,
G. B. Lewis Co.

E. R. ROOT,
Editor of Gleanings in Bee Culture.

A. L. BOYDEN,
Secretary The A. I. Root Co.

BURTON N. GATES,
Massachusetts Agricultural College,
Amherst, Mass.

The American Bee Journal is heartily in favor of the above suggestions and of anything which will increase the production of food articles. We hear from private sources that in many countries the sugar supply is short. Now is the time to urge the most extensive production of honey which it is possible to secure.

Classified Department

BEES AND QUEENS.

PHELPS' Golden Italian Queens will please you.

FULMER'S Gray Caucasian queens are winners; also by frame and pound.

MINNESOTA bred Italian queens. Virgins, 45c; mated, $1.00. O. C. Wandrie, Frazee, Minn

BEES AND QUEENS from my New Jersey apiary. J. H. M. Cook,
1Atf 84 Cortland St., New York City.

TRY ALEXANDER'S Italian queens for results. Untested, each, 75c; 6 for $4.25; $8.00 per dozen. C. F. Alexander, Campbell, Cal.

FINEST ITALIAN QUEENS. Send for circular and prices. May to November.
J. W. Romberger, 3113 Locust St., St. Joe, Mo.

TESTED leather-colored queens, $2.00; after June 1, $1.50; untested, $1.00; $10 per dozen. A. W. Yates, 3 Chapman St., Hartford, Conn.

PLACE your order early to insure prompt service. Tested, $1.25; untested, $1.00. Italians and Goldens. John W. Pharr,
Berclair, Tex.

FOR SALE—Golden untested queen, $1.00; 6 for $5.00. For quantities, write me. Satisfaction guaranteed. R. O. Cox,
Rt. 4, Greenville, Ala.

FOR SALE—200 COLONIES ITALIAN BEES in 10-fr. hives. All worker comb, extracting supers and section-holders. J. B. Merwin,
Prattsville, N. Y.

PHELPS' Golden Italian Bees are hustlers

VIGOROUS prolific Italian queens $1.00; 6, $5.00, June 1st. My circular gives best methods of introduction. A. V. Small,
2303 Agency Road, St. Joseph, Mo.

FOR SALE—7500 pounds of bees in combless packages, starting April 1, 1917. Better write us before it is too late to have your order booked. Marchant Bros.,
Union Springs, Ala.

MY BRIGHT Italian queens will be ready to ship after April 1st at 60c each. Send for price list. Safe arrival and satisfaction guaranteed. M. Bates, Rt. 4, Greenville, Ala.

FOR SALE—Bright Italian queens at 75c each; $7.50 per doz. Ready April 15. Safe arrival and satisfaction guaranteed.
T. J. Talley, Rt. 3, Greenville, Ala.

TRY my very best Caucasian-Italian tested queens at $1.00 each. Hybrids at 25c each.
Peter Schaffhauser, Havelock, N. C.

GOLDEN ITALIAN QUEENS, no better honey gatherers anywhere at any price. Untested, $1.00. Tested, $2.00. Wallace R. Beaver,
Lincoln, Ill.

ITALIAN QUEENS from the E. E. Mott's strain of bees. Unt., 90c each; $9.00 per doz. Safe delivery guaranteed.
Earl E. Mott, Glenwood, Mich.

I AM now booking orders for my 3-banded Italian queens, for delivery after May 20. One untested, 75c; 6, $4.25; 12, $8.00. Tested queens, $1.50. Robt. B. Spicer, Wharton, N. J.

FOR SALE—1000 lbs. of bees in 2-lb. packages. 1 to 49 2-lbs. bees in package, $2.25 each; 50 to 500 2-lbs. bees in package, $2.12½ each. Untested Italian queens, 75c extra.
H E. Graham, Gause, Tex.

RHODE ISLAND Queens, Italian, Carniolan, Caucasian and Banats. Tested in May, $2.00. Untested, $1.50. Full colonies and bees by the pound. Send for circular.
Edwin Tuttle, Woonsocket. R. I.

QUEENS OF QUALITY—Select 3-band leather colored Italians, bred for honey production. Untested queens, 75c each; six, $4.25; 12, $8.00. Circular free.
J. I. Banks, Dowelltown, Tenn.

HEAD your colonies with some of our vigorous young three banded Italian queens. Untested, June 1, $1.00; per doz., $9.00; nuclei and full colonies. Satisfaction guaranteed.
A. E. Crandall & Son, Berlin, Conn.

GOLDENS that are true to name. Write for testimonials; one race only. Unt., each, 75c; 6, $4.25; 12, $8.25; 50, $32.50; 100, $60. Tested, $1.50. Sel. test., $2.00. Breeders, $5.00 and $10.
Garden City Apiaries, San Jose, Calif.

QUEENS—3-banded Italians. Bred strictly for business. Untested, 60c. Tested, $1.00. Safe arrival and satisfaction guaranteed or money refunded. Sinking Creek Apiaries,
Gimlet, Ky.

FOR SALE—A fine apiary of 95 colonies, together with all fixtures. Good location for honey. Never had a failure. Reason for selling, death of wife. For further particulars, address H. C. Gadberry, Miami, Mo.

FOR SALE—2-fr. nuclei 3-band Italians with queen, $2.25; 1-lb. bees with queen, $1.65. Hoffman frames wire and foundation at catalog prices. J. B. Marshall & Son,
Rosedale Apiaries, Big Bend, La.

LEATHER colored 3-band Italian bees, $1.25 per pound. Tested queens, $1.00; untested, 75c each; 2-fr. nuclei, $2.00. Delivery after April 15. C. H. Cobb, Belleville, Ark.

WELL BRED 3-banded Italian queens' Prices for June, one, $1.00; 6 for $5.00. Tested, $1.25; 6 for $7.00. Write for circular. Nuclei and full colonies ready now.
J. F. Diemer, Rt. 3, Liberty, Mo.

TO INQUIRERS:—I sell no queens directly but have an arrangement with the Stover Apiaries, Starkville, Miss., which I keep supplied with best breeders, and they can supply you with my stock.
C. C. Miller, Marengo, Ill.

GOLDEN Italian Queens by June 1st. Untested, 75c, or six for $4.25; doz., $8.00. Select untested, $1.00. Tested, $1.25; six for $7.00. Breeders, $5.00. Pure mating guaranteed. Send for circular. J. I. Danielson,
Fairfield, Iowa.

MY BRIGHT Italian queens will be ready to ship April 1 at 75c each; virgin queens, 30c each. Send for price list of queens. Bees by the pound. Safe arrival and satisfaction guaranteed. W. W. Talley,
Rt. 4, Greenville, Ala.

SWARTS' Golden Queens of quality; produce bees that are not surpassed by any bees, in any way, anywhere. Satisfaction guaranteed. Mated, $1.00. Select, $1 25; 6 for $5.00. Tested, $1.75. Select, $2.00.
D. L. Swarts, Rt. 2, Lancaster, Ohio.

FINE ITALIAN QUEENS—Can furnish select stock at the following prices: Single queen, $1.00 each; 2 queens, $1.75; 3 queens, $2.50; 12 queens, $9.00. Six or more at dozen rates. No disease. Safe arrival. Can begin filling orders about May 15. Give me a trial.
Chas. M. Darrow, Star Rt., Milo, Mo.

GOLDEN QUEENS that produce Golden Workers of the brightest kind. I will challenge the world on my Goldens and their honey-getting qualities. Price, $1.00 each; Tested, $2.00: Breeders, $5.00 and $10.00.
2Atf J. B. Brockwell, Barnetts, Va.

GOLDEN ITALIAN QUEENS from a breeder that was 1st premium winner at Ill. State Fair in 1916. Untested, 75c; six for $4.25; 12 for $8.00. Select untested, one, $1.00; 6, $5.00; 12, $9.00. Tested, $1.50; 6, $8.00.
A. O. Heinzel, Rt. 3, Lincoln, Ill.

BUSINESS FIRST QUEENS—three-banded Italians. Select untested, $1.00 each. Your queen sent by return mail or your money back. I will send each one ordering from me a plan for preventing swarming if you desire. No disease. Send for price list.
M. F. Perry, Bradentown, Fla.

QUEENS—1-year Root cheap. Best select tested, 90c; average, 70c; medium, 50c. Two Root breeders, 2 yr. old, $2 50 each. Moore queens, young, from another yard, untested, 75c; doz., $8 00. Tested, $1.00; doz., $10. Book orders now for May 20 delivery. Safe arrival and satisfaction guaranteed.
J. C. Robbins, Jr., Mesilla Park, N. Mex.

GOOD ITALIAN QUEENS—Tested, $1.00; untested, 75c. One-pound packages with untested queen, $2.25; 2-lb. package, $3.25. One-pound package with tested queen, $2.50; 2-lb. package, $3.50. Nuclei with untested queen, 2-frame, $3.25; 3-frame, $4.00. With tested queen, 2-frame, $3.50; 3-frame, $4.25. We can please you. G. W. Moon
1004 Park Ave., Little Rock, Ark.

GOLDEN Italian queens; northern breed; new methods. Our standard, size and honey producing qualities. Write for circular and price list.
H. M. Leach & Sons, Hiram, Ohio.

GOLDEN ITALIAN Queens about May 1, that produce golden bees. Good honey gatherers. No foulbrood. Select tested, $1.25 Tested, $1.00. Untested, 75c; 6, $4.25; 12, $8.00. No nuclei or bees for sale.
D. T. Gaster, Rt. 2, Randleman, N. C.

PHELPS' Golden Italian Queens combine the qualities you want. They are great honey gatherers, beautiful and gentle. Mated, $1.00; six, $5.00; Tested, $3.00; Breeders, $5.00 and $10. C. W. Phelps & Son,
3 Wilcox St., Binghamton, N. Y.

GOLDEN ITALIAN queens of the quality you need. Bred strictly to produce Golden bees that get the honey. One, 75c; 6, $4.25; 12, $8.25; 50 or more, 60c each. Prompt delivery and satisfaction guaranteed.
L. J. Pfeiffer, Rt. A, Bx. 219, Los Gatos, Calif.

I AM NOW prepared to supply you with Golden 3-banded and Carniolan queens. Give me a trial and be pleased. Tested, each, $1.00; 12 or more, 85c each. Untested, 75c each; 12 or more, 65c each. Ten percent discount on orders booked 30 days before shipment. No credit; no c. o. d. shipments.
I. N. Bankston, Eagle Ford, Tex.

GOLDEN ITALIAN QUEENS bred strictly for business, that produce a strong race of bees as honey gatherers By April 1, untested, 75c each; 6 for $4.25; 12, $8.00; 100, $60. Tested, $1.50. Safe arrival, prompt delivery and satisfaction guaranteed.
L. J. Dunn, 59 Broadway Ave., San Jose, Cal.

GOLDEN 3 BAND Italian and Carniolan queens: Virgin, one, 50c; 6, $2 50; 12, $4.00; 100, $25. Untested, one, 75c, 6, $4.20; 12, $7.80; 100, $60. Select untested, one, 85c; 6, $4.80; 12, $9.00; 100, $70. Tested, one, $1.00; 6, $5 40; 12, $10.20; 100, $80. Select tested, one, $1.25, 12, $13.80; 100, $100. Breeders, $3.00 each.
Bees in packages without combs: ½-lb., 75c; 1-lb., $1.25; 2-lb, $2.25. Nuclei, 1-frame, $1.25; 2 frames, $2.25; 3 frames, $3.00. Add price of queens wanted. We guarantee safe arrival and no disease.
C. B. Bankston, Buffalo, Tex.

GRAY CAUCASIANS, an exceptionally vigorous, prolific, long lived race. Early breeders, gentle, and best of honey gatherers. Untested queens, $1.50. Select unt., $2.00. Tested, $3.00. Select tested, $3.50. After June 20th, untested, $1.00. Select unt., $1.25. Tested, $2.00. Select tested. $2.50. Improved northern bred Italian queens as good as the best at same prices. If you desire Caucasian queens, please let me book your order early. Ask for circular. F. L. Barber, The Queen Breeder, Lowville, Lewis Co., N. Y.

LEGAL NOTICE.—The Texas Honey Producers' Association, with main office at San Antonio, Tex., hereby gives notice of the organization as a limited partnership. It is organized with the intention of incorporation under the laws of the State of Texas for the business of purchase and sale of honey, beekeepers' supplies, cans and appliances used in the production and sale of apiary products. The liability of any member may be learned upon application to E. G. LeStourgeon, Secretary, P. O. Box 1048, San Antonio, Tex.

FOR SALE—Three-band Italian bees and queens. Our bees and queens last year gave general satisfaction, and this year we are in position to give stronger nuclei with a greater percent of brood than we did last year. If it is a bargain you are looking for send your order this way. We are now shipping bees and queens daily. Bees are all in standard hives, Hoffman frames wired and full sheets of foundation. We guarantee bees to be free from disease.
Bees without queen: Three-frame nuclei, $2.25; 2-frame nuclei, $1.75; 1-frame nuclei, $1.25. Three-lb. bees, $3.25; 2-lb. bees, $2.25; 1-lb, $1.50. 3-band Italian queen, untested, 75c. Tested, $1.00. If queen is wanted, add price of queen.
The Hyde Bee Co., Floresville, Tex.

FOR SALE—Famous Root's, Moore's, Davis', Geo. B. Hows' strain of Italian 3-band bees.
March 21, 1917.
H. B. MURRAY, ESQ., Liberty, N. C.
Dear Sir:—In 1914 I purchased two untested Italian queens of you. One was introduced to a full swarm which did fairly well, and the other was introduced to a small nucleus. The one which was introduced into the nucleus developed into an extra large swarm, and I gave it another 10-frame hive-body in July and sent it to Glendale. I did not visit it until after the honey flow and was surprised to find that the entire 20 frames were practically full of honey. In the spring of 1915 I brought the queen home, and although I had an imported queen in the yard have used your queen as a breeder, and now hundreds of her daughters are scattered through New England.
This strain of bees are vigorous, extremely gentle, evenly marked, fine honey gatherers, and cap their honey very white, and are the best all around bees I have ever seen. I shall want a dozen untested queens of this strain May 1. Truly yours,
EDWIN F TUTTLE.

I have hundreds of recommendations of my strain of bees. H. B. MURRAY.

Price before July 1; Untested queen, 1, 75c; 6, $4.00; 12, $8 00. Select untested, 1, $1.00; 6, $4.50; 12, $8.50. Tested, 1, $1.25; 6, $6.00; 12, $10. Select tested, 1, $1.50; 6, $8.00; 12, $13. Extra select tested, 1, $2.00; 6, $10; 12, $15. ½-lb. bees with queen, 1, $2.00; 6, $10; 12, $16. 1-lb. bees with queen, 1, $2.50; 6, $12; 12, $20.
After July 1: Untested queen, 1, 70c; 6, $3.25; 12, $6.50. Select untested, 1, 80c; 6, $3.75; 12, $7.00. Tested, 1, $1.25; 6, $5.00; 12, $9 00. Select tested, 1, $1.50; 6. $6.00; 12, $10. Extra select tested, $2 00; 6, $8.00; 12, $13. ½-lb. bees with queen, 1, $1.75; 6, $8.00; 12, $14.00. 1-lb. bees with queen, 1, $2.00; 6, $10; 12, $17.
H. B. MURRAY, Liberty, N. C.

HONEY AND BEESWAX

FOR SALE—White clover comb honey, No. 1 and fancy. W. L. Ritter, Genoa, Ill.

WANTED—Comb, extracted honey, and beeswax. R. A. Burnett & Co.,
6A12t 173 S. Water St., Chicago, Ill.

WANTED—Beeswax at all times in any quantity, for cash or in exchange for supplies. Dadant & Sons, Hamilton, Ill.

WANTED TO BUY a quantity of dark and amber honey for baking purposes.
A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE to the highest bidder a limited quantity of Michigan's best white extracted honey, in 60-pound tins.
A. G. Woodman, Co., Grand Rapids, Mich.

COMB HONEY our specialty. Highest market prices obtained. Consignments of Extracted Honey also solicited.
Albert Hurt & Co., New Orleans, La.

HONEY WANTED—Extracted, white, light amber and amber of good quality. Can use several cars. Send samples and prices.
Wesley Foster, Boulder, Colo.

FOR SALE—200 cases white clover comb honey. It is mostly fancy stock, and is cased in 24 section shipping cases. Interested parties address Bell E. Berryman,
Central City, Nebr.

WANTED—Extracted white clover and light amber honey. Will buy in lots of 1000 pounds to a carload. I pay cash. State what you have and send sample with lowest price. Write. M. E. Eggers, Rt. 1, Eau Claire, Wis.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered.
The Fred W. Muth Co.,
204 Walnut St., Cincinnati, Ohio.

HONEY WANTED—We are in the market for white and light amber grades of honey, also off grades which are suitable for baking. If you have such honey to offer, please send us sample, state the quantity you have, how packed and your lowest price for same.
Dadant & Sons, Hamilton, Ill.

FOR SALE—260 L. frames of drawn combs, wired, hives, extractor, etc. No disease.
P. H. Dunn, Akron, Iowa.

NORTHWESTERN BEEKEEPERS! Save time and freight by ordering supplies (at catalog prices) near home. Geo. F. Webster,
Valley View Farm, Sioux Falls, S. Dak.

FOR SALE—Cedar or pine dovetailed hives, also full line of supplies including Dadant's foundation. Write for catalog.
A. E. Burdick, Sunnyside, Wash.

WANTED—Wax and old combs for cash or to make up on shares. "Best quality" foundation made and sold cheap in small lots.
J. J. Angus, Grand Haven, Mich.

BEE-KEEPER, let us send our catalog of hives, smokers, foundation, veils, etc. They are nice and cheap. White Mfg. Co.,
4Atf Paris, Tex.

SUPPLIES.

WANTED—A small extractor in good condition. Wesley Koch, Kingsley, Mich.

FOR SALE—260 L. frames of drawn combs, well wired, hives, extractor, etc. No disease. P. H. Dunn, Akron, Iowa.

FIFTEEN PERCENT discount on med. brood foundation, Hoffman frame hive-bodies.
E. Decock. Medford, Wis.

FOR SALE—100 comb honey supers; all painted white; about half dovet'd; the rest hand made. All in first-class shape. 25 to 30 cents apiece, if sold at once. Address,
James D. Benson, Rt. 2, Juda, Wis.

FOR SALE—Fifty 8-frame hives; used but in good condition; painted; complete with frames; no combs, with Higginsville cover and reversible bottom, at $1.00 each or $45.00 for the lot. The M. C. Silsbee Co.,
Cohocton, Rt. 3, N. Y.

SITUATIONS.

WANTED—Industrious young man, fast worker, and of clean mental and body habits, as a student helper in our large bee business for 1917 season. Will give results of long experience, and board and small wages. Give age, weight, experience, and wages in first letter.
W. A. Latshaw Co., Clarion, Mich.

HONEY LABELS

HONEY LABELS of the better sort. Not only the most attractive but also the lowest in price. Send today for free samples.
Liberty Pub. Co., Sta. D, Box 4H, Cleveland, O.

HONEY LABELS.—We have just issued a new and up-to-date catalog of honey labels and stationery. Write for your copy. Neat labels and quick delivery guaranteed.
American Bee Journal, Hamilton, Ill.

WANTED

WANTED—75 or 100 colonies of bees; 10-fr. hives; wired frames. Price reasonable. P. O. Box 596 "U" Farm. St. Paul, Minn.

WANTED—Your old combs, cappings or slumgum to render into beeswax by our high steam pressure wax presses. Dadant & Sons, Hamilton, Ill.

MISCELLANEOUS

25 LADIES' COATS, bird dogs, wild ducks for sale or exchange for bees. A. J. Graves, Ocheyedan, Iowa.

FOR TRADE—One $21 post card camera and outfit to exchange for a second-hand extractor. Write J. L. Barkley, Lometa, Tex.

FOR SALE—10 a. home; 4 a. in blue grass pasture; 4 a. in alfalfa; 2 a. in garden and orchard; 12 varieties of fruit; watered by 3 springs and creek; 4-roomed house and outbuildings; ½ mi. to school; 1 mi. to R. R. station; electric lights and telephone; $2800. Terms easy; 100 col. bees also for sale. Jes Dalton, R. R. 1, Cove, Oregon.

FOR SALE—Oak Ridge Apiary, consisting of 150 colonies of bees, house, barn, work shop, cement chicken house, with 5½ acres of land and bearing fruit. Situated 2½ miles from town with two, R. R., one a divison point. 20 miles from a city of 80,000 inhabitants. Address, Box A 12, R. F. D. 3, Chillicothe, Ill.

CASH paid for butterflies, insects. Some $1 to $7 each. Easy work. Even two boys earned good money with mother's help and my pictures, descriptions, price list, and simple instructions, on painlessly killing, etc. Send 2c stamp at once for prospectus. SINCLAIR, Box 244, D 41, Los Angeles, Cal.

Statement of Ownership, Management, Circulation, Etc.,

of the American Bee Journal, published monthly at Hamilton, Illinois.

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[Signed] M. G. DADANT, *Manager.*

Sworn to and subscribed before me this 14th day of April, 1917.

[SEAL.] R. R. WALLACE. *Notary Public.*

My Commission expires Sept. 22, 1917

Crop Reports and Market Conditions

CROP AND MARKET REPORT.

For our May reports we sent out the following questions:

1. How much winter losses?
2. Crop and plant prospects?
3. How is the honey crop, so far?
4. Has any honey of 1917 crop been sold ahead, and at what price?
5. What is being offered in carloads for fall delivery of honey?
6. What prices would you suggest in car lots for honey, comb, extracted, and bulk comb?

WINTER LOSSES

The following is a summary taken from the reports coming in: Losses in the whole northeastern part of the country and as far west as the Missouri river have been about normal, varying from as high as 50% with the beginner down to 2% with the veteran, with probably an average loss of 6 to 10%. Losses have also been normal throughout the south, with some large losses from certain Louisiana and Oklahoma districts. The weather there has been exceedingly backward, however, and spring losses from starvation are large. The average loss will be probably 10%.

In the west, the winter has been exceedingly severe and losses run higher than common, Utah reporting 40 to 60% loss, and this from experienced producers. Idaho losses range from 10 to 30% generally, with about the same for Washington. Colorado reports 10 to 15% loss, with one producer reporting 50%.

CROP PROSPECTS

Except for spotted districts, the white clover prospects of the north and east are good. Some parts of Illinois, Iowa, Nebraska and the Dakotas, report the clover practically all killed. Minnesota, Wisconsin, Michigan and the east had even better prospects than last year. Other sections are probably 60 to 85% of normal to a little above normal conditions.

In the southeast, the only places reporting normal conditions are Georgia and parts of Florida. The balance of the section is backward, with the anticipation that the crop will not range much over 50% of normal. In Texas and Louisiana it is extremely dry, bees are still starving and the crop will run very low, being estimated by different producers in scattered sections at from 10 to 50% of a normal crop.

Conditions of plants in the northwest are about normal, and probably a little lower than normal in California, owing to a backward spring, and extremely cool weather which still continues.

THE HONEY CROP

All early honey-producing plants in Texas have failed. Louisiana is the same. In fact, the whole South is, except that there is a good flow now on from titi in Georgia. It is yielding some surplus.

HONEY SOLD IN ADVANCE

There are no reports of advance sales in the East or South, except that in Texas some sales have been made in advance in a small way at 12c for extracted and 14c for bulk comb. One Michigan and one Wisconsin reporter state that they have sold their entire crop of extracted clover at 8c f. o. b. their station.

Practically no advance sales have been made in the west, but in California, probably 25% of the extracted honey has been contracted for at prices ranging from 6½c to 7½c for amber and 7½c to 9c for white, f. o. b. shipping point.

OFFERS FROM BUYERS

Buyers are very active. Many producers have refused 8c for white extracted and 7c for amber. Some offers have been made for orange extracted, soon to be harvested, at 9½c, f. o. b. shipping point. Many offers have been made in California of 7 or 7½c for all the crop of a beekeeper—amber and white. One party reported that buyers were endeavoring to contract at almost any price to get the honey. The above is not true of comb, very little being offered on.

It is reported that the British government attempted to contract for 5,000 barrels of honey in San Antonio at prices ranging from 7c to 11c per pound, according to grade. One New York buyer reports an order from a British firm which he is attempting to fill at their prices.

SUGGESTIONS FOR CAR LOT PRICES

Almost all kinds of prices were suggested by reporters, from as low as 7c for amber extracted to as high as $4.50 per case for comb in car lots. The consensus of opinion is that extracted white honey should command a price of not less than 10c f. o. b. shipping point in car lots, with 1½ to 2½c less for amber, depending upon grade. The favorite prices for comb in car lots seem to be $3.25 to $3.75 per case.

We are passing through an unusual period at present. The war, the demand from abroad, the increased demand of large bottlers, and the increased local sales of honey are bound to elevate the price.

If contracts are ahead they should be made with as full a comprehension as possible of existing conditions and at a price absolutely satisfactory to the beekeeper.

One point which we would emphasize among beekeepers is that there should be some distinction between the retail and wholesale prices. That is, a beekeeper should not get the same price for ten pounds of honey as for ten thousand. If he tries to do this he is bound to suffer from needlessly low prices when he tries to sell his honey in large lots to others who are selling again.

But remember, that though we as beekeepers want to get our proportionate share of increased prices, we as patriotic citizens must, above all, follow the suggestions in the President's message and exert ourselves to the utmost to increase the crop of honey from our bees. Leave no stone unturned to increase the yield, not only from our bees, but from every foot of available land.

HONEY AND BEESWAX

CHICAGO, April 17.—There is not much change in the market since our last quotations. Extracted honey is still in demand, with the white selling at 10@11c per pound; ambers 8@9c per pound. Comb honey for which there is very little demand, 14@15c per pound. Beeswax if clean 33@35 per lb.
R. A BURNETT & Co.

KANSAS CITY, MO., April 16.—The market on honey is very firm at $2.75 for No. 1, and we believe that something fine would bring a little more. Extracted honey is cleaning up and there is very little here. The market ranges from 8@12c, according to the quality and kind of honey. Beeswax is worth from 30@33c a pound, according to quality.
C. C. CLEMONS PRODUCE COMPANY.

CHICAGO, April 17.—Our honey market is a little more active. Our market is cleaning up pretty well. We have handled over eight cars this year, and we are sold down to less than a hundred cases today. In fact, we are in the market for honey.

We are also pretty well cleaned up on extracted honey. We are selling this at 10@12c per pound. We look to see honey clean up high for the of balance the season. Of course, it is getting late and it ought to be sold.

The comb honey last year had a very poor wind up. Honey did not clean up and some was carried over last year, although we always clean up, and make it a point to do this by the first of May. We give credit partly to ourselves this year for the active aggressive campaign we adapted in keeping the honey before the public and pushing it in every way possible. While we only handled eight cars this year, probably next year we will handle twelve or fifteen cars both comb and extracted honey.

The market on beeswax remains unchanged, from 30@35c, according to color and quality.
COYNE BROTHERS.

NEW YORK, April 17.—All grades of comb honey are well cleaned up, with the exception ot some odds and ends of poor quality, for which there is no demand to speak of. White honey will bring from 14@16c a pound, according to quality, lower grades from 11@13c.

Extracted honey is also well cleaned up and very little stock available at this time. As to the conditions of the market in general, in comparison with last year at this time, prices are ruling considerably higher and supplies are much less.

Beeswax is in good demand, and prices rule from 40@42c a pound, according to quality.
HILDRETH & SEGELKEN.

SAN ANTONIO, April 16.—The market is practically bare of honey—both comb and extracted. Owing to the extreme drouth early honey flows have been cut off or delayed and no honey will be shipped from Texas for some weeks. Prices ranging from 8@10c for extracted, and 10@12c for bulk comb are being offered for new honey, but little, if any, is being contracted for. Beeswax is firm and in strong demand. Local prices 30@32c per pound.
SOUTHWESTERN BEE CO.

DENVER, Colo., April 16.—With the exception of a small lot of extra fancy white comb honey we are entirely cleaned up. Our supply of extracted is only sufficient for our local requirements.

Demand for extracted in carlot continues strong. There is also a fair demand for comb honey in carlot, which is unusual this late in the season. We are quoting the following jobbing prices: Extra fancy comb honey, per case, $3.15. Fancy, out of stock. No. 1. out of stock. No. 2, out of stock.
THE COLO. HONEY PRODUCERS' ASS'N.
F. Rauchfuss, *Mgr.*

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Is the new 280 page cloth bound book, just out. It is a compilation of some 1000 questions out of more than 10,000 that Dr. Miller has answered for beekeepers in the American Bee Journal in the last 22 years.

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You know Dr. Miller, and you can look forward to an invaluable series of answers. You should know the American Bee Journal. C. P. Dadant is its Editor, Dr. Miller himself is Associate Editor, and Frank C. Pellett is Staff Correspondent.

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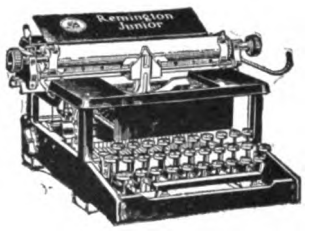
that resist disease well. Those that resist disease must be hardy, prolific, and hustlers; they are gentle. Bees per pound. Plans on "How to Introduce Queens and Increase," 25 cents. List free.

E. E. MOTT, Glenwood, Mich.



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It sells for $50. It is sold either for cash or on easy payments—$5 down and $5 a month.
We will send it on ten days' examination to any address within the first and second parcel post zones of any Remington branch office. If you decide not to keep it, return within ten days—no obligation involved.

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Send me a Remington Junior Typewriter, price $50, on free examination. It is understood that I may return the machine, if I choose, within ten days. If I decide to purchase it, I agree to pay for it in 10 monthly payments of $5 each.

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GOLDEN ITALIAN QUEENS

Read a few reports of big yields from single colonies of this gentle strain of Goldens: H. E. Bartz, Keytesville, Mo., 264 pounds of extracted honey; J. M. Buchanan, Franklin, Tenn., 250 pounds of extracted honey; L. C. McCarty, Nampa, Idaho, 250 pounds of comb honey; Fred Dury, Unionville, Mo., 374 pounds of comb and extracted honey.

I guarantee safe arrival (U. S. and Canada), purity of mating and satisfaction. Write for circular.

—Prices of Queens—

	Nov. 1 to May 1			May 1 to June 1			June 1 to July 1			July 1 to Nov. 1		
	1	6	12	1	6	12	1	6	12	1	6	12
Untested	$1.50	$ 7.50	$13.50	$1.25	$ 6.50	$11.50	$1.00	$ 5.00	$ 9.00	$ .75	$ 4.00	$ 7.50
Select untested	2.00	8.50	15.00	1.50	7.50	13.50	1.25	6.50	12.00	1.00	5.00	9.00
Tested	3.50	13.50	25.00	2.00	10.50	18.50	1.75	9.00	17.00	1.50	8.00	15.00
Select tested	3.00	16.50	30.00	2.75	15.00	27.00	2.50	13.50	25.00	2.00	10.00	18.00

Select queen tested for breeding, $5.00. - The very best queen tested for breeding, $10.00

BEN G. DAVIS, Spring Hill, Tennessee

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15 LBS. SURPLUS — *Which Colony is Yours, Mr. Beekeeper?* — 150 LBS. SURPLUS

GET A GOOD QUEEN

One that will keep the hive chock-full of bees at all times, make the biggest yields of honey, stingless, and look the prettiest at a medium price. Over 25 years of select breeding has brought our queens up to a standard surpassed by none and superior of many. We have tried the principal races and every method known, and we have now selected the best of both. THE DOOLITTLE METHOD and the THREE-BAND BEES. Use the 3-Bands. Why? Because they get results. The foremost bee-men of the world use them. Our queens are sold by many of the largest dealers in the United States.

Louis H. Scholl (one of the largest beekeepers of the Southwest) says: "Three-band Italians have proven the best all-round purpose bee after trying out nearly every race, not only in an experimental way while still at A. M. College, but in our own apiaries as well."—(*In Beekeepers' Item.*)

	1	6	12		1	6	12
Untested	$ .75	$ 4.25	$ 8.00	Tested	$1.50	$ 8.75	$17.00
Select untested	1.00	4.75	9.00	Select tested	2.00	11.00	20.00

Write for circular giving general description. Mail all orders to

W. J. FOREHAND & SONS, Ft. Deposit, Ala.

TYPEWRITER SENSATION

$2.50 a Month Buys Visible Writing L. C. Smith

Perfect machines only of standard size with keyboard of standard universal arrangement—has Backspacer—Tabulator—two color ribbon—Ball Bearing construction—every operating convenience. **Five Days' Free Trial.** Fully guaranteed. Catalog and special price free.

H. A. SMITH, 314–231 North Fifth Avenue, Chicago, Illinois

QUEENS OF QUALITY

Capacity of my yards over 1000 Queens a month

After 20 years of careful selection and breeding, I now have a strain of bees that cannot be excelled by any. My queens are all bred from IMPORTED STOCK, the very best in the world for honey gathering and gentleness. They are not given to swarming. What more do you want in bees than the three above qualities?

G U A R A N T E E

You take no risk in buying my queens, for I guarantee every queen to reach you in first-class condition, to be purely mated and to give perfect satisfaction. All queens that do not give satisfaction I will replace. Send for circular.

PRICES APRIL 1ST JULY 1ST	1	6	12
Untested	$ .75	$ 4.25	$ 8.00
Select untested	.90	5.00	9.00
Tested	1.25	7.00	13.00
Select tested	2.00	11.00	20.00

L. L. FOREHAND, Ft. Deposit, Alabama

EVERY BEEKEEPER KNOWS

The worth of a *good* queen, the worth of a *good* strain of bees- and also knows how *worthless* is a poor queen and inferior bees. Try our strain of three-band Italians; they will not disappoint you. Vigorous, prolific queens; bees that get the honey. *Another* thing, no *disease* in this locality. Tested queens of last fall rearing by return mail. $1.00 each. Untested queens, single queen, $1.00; $9.00 per dozen.

J. W. K. SHAW & CO.
Loreauville, Louisiana

Gray Caucasians

Early breeders; great honey gatherers; cap beautifully white, great comb builders; very prolific; gentle; hardy; good winterers. Untested, $1.00. Select untested, $1.25. Tested, $1.50 Select Tested, $2.00. The best all-purpose bee.

H. W. FULMER, Point Pleasant, Pa.

TEXAS QUEENS

Golden and 3-Banded Italians and Carniolans, fine workers. Queens, 75 cts. each; $8.00 per doz. Bees in pound packages, $1.25; 2-lb. pack. $2.25. Your satisfaction my object.

GRANT ANDERSON
Rio Hondo, Texas

3-BANDED ITALIANS

From May 1 until June 1

Untested, $1.00; 6, $4.50; 12, $8.00. Tested, $1.25; 6, $5.50; 12, $10.50

From June 1 until Nov. 1

Untested, 75c; 6, $4.00; 12, $7.50. Tested, $1.00; 6, $5.00; 12, $9.00. Select tested $2.00 each. Circular free.

JOHN G. MILLER
723 C St., Corpus Christi, Texas

QUEENS

Quirin's Improved Superior Italian Bees and Queens. They are Northern bred and hardy. 25 years a Queen Breeder.

PRICES	Before July 1st			After July 1st		
	1	6	12	1	6	12
Select untested	$1 00	$ 5.00	$ 9 00	$ .75	$ 4 00	$ 7.00
Tested	1.50	8.00	15.00	1.00	5.00	9.00
Select tested	2.00	10 00	18.00	1.50	8.00	15.00
2-comb nuclei	2.50	14.00	25.00	2.25	12.00	22.00
3-comb nuclei	3.50	20.00	35.00	3.25	18.00	32.00
8-frame colonies	6.00	30.00		5.00	25.00	
10-frame colonies	7.50	38.00		6.00	32.00	
½-pound package bees	1.50	7.00		1.00	5.00	
1-pound package bees	2.00	10.00		1.50	8.00	

BREEDERS.—The cream selected from our entire stock of outyards; nothing better. These breeders $5.00 each.

Can furnish bees on Danzenbaker and Langstroth or Hoffman frames.

Above price on bees by pound, nuclei, and colonies does not include queen. You are to select such queen as you wish with the bees, and add the price.

No bees by pound sent out until first of June. Also nuclei and colonies, if wanted before June 1, add 25 percent to price in table.

Breeders, select tested, and tested queens can be sent out as early as weather will permit Send for testimonials. Orders booked now.

Reference any large supply dealer or any bank having Dun's reference book.

H. G. QUIRIN, Bellevue, Ohio

BEES

If you are thinking of buying bees this spring, we would be pleased to hear from you. We furnish full and nucleus colonies, bees by the pound, and queens.

A strong colony of Italian bees with a tested Italian queen, in a new 8-frame dovetail hive, complete with super, for $11.00. Tested Italian queens, $1.50. Untested, $1.10.

Our catalog of bee supplies, honey jars, and everything a beekeeper uses, mailed upon request.

I. J. STRINGHAM
105 Park Place, New York
Home Apiary: Glen Cove, L. I.

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Let Us Figure With You

We know we can satisfy you on price and quality. Write for catalog.

C. C. Clemons Bee-Supply Co.
Dept. S., Kansas City, Missouri

FOR SALE 10,000 POUNDS OF BEES SPRING DELIVERY

20 Years of Select Breeding Gives Us Bees of Highest Quality

BEES FOR HONEY PRODUCTION—BEES OF UNUSUAL VITALITY

M. C. BERRY & CO., Hayneville, Ala.

Gentlemen:—Will want more of your three-pound packages of bees with queens the coming spring. The two I bought of you last May did all right. One package made 185 sections of honey and gave one swarm, and the other made 206 sections and gave two swarms. I am well pleased. MELVIN WYSONG, KIMMELL, IND.

SWARMS OF BEES BY THE POUND WITHOUT QUEENS READY APRIL 1

1-lb. pkgs. $1.25 each; 25 to 50 pkgs. $1.22½ each; 50 to 100 pkgs. $1.20 each; 2-lb. pkgs. $2.25 each; 25 to 50 pkgs. $2.22½ each; 50 to 100 and up, $2.20 each; 3-lb. pkgs $3.25 each; 25 to 50 pkgs. $3.22½ each; 50 to 100 and up, $3.20 each.

GOLDEN AND 3-BAND ITALIAN QUEENS READY APRIL 1

Untested.....75 cts. each; $65.00 per 100 | Tested.....$1.25 each; $110.00 per 100
Select untested.....00 cts. " ; $75.00 " 100 | Select tested 1 50 " 125 00 " 100

Write for descriptive price list. Let us book your order now. Only a small deposit required.

LARGEST AND MOST SUCCESSFUL SHIPPERS OF BEES IN PACKAGES

M. C. BERRY & COMPANY, Hayneville, Alabama, U. S. A.

The Double-Walled Massie Bee-Hive

Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate

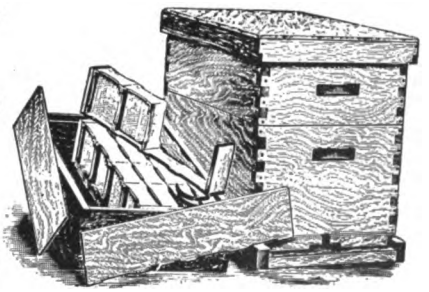
THE MASSIE HIVE
For Comb or Extracted Honey

Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracting Frames made from White Pine

VENTILATED BOTTOM

Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

Fifty years in the bee-supply business has shown us that the **Massie is the very best hive,** and testimonials to this effect are received daily from those who are using this hive.



The Dovetailed Hive for Comb Honey

Why Not Give Us a Trial Order? Satisfaction Fully Guaranteed

We are also extensive manufacturers of **Dovetailed Hives and all other Apiarian Supplies** If you are in the market for supplies be sure to get our prices before buying elsewhere. We will mail our large illustrated catalog and **special price list** to any one upon request

KRETCHMER MFG. COMPANY, 110 3d St. Council Bluffs, Iowa

The Double-Walled Massie Bee-Hive

Surest Protection for Bees—Increased Supply of Honey—The Best Hive for any Climate

THE MASSIE HIVE
For Comb or Extracted Honey

Furnished in the clearest of lumber in either Cypress, White Pine or Redwood. All Brood and Extracting Frames made from White Pine

VENTILATED BOTTOM

Admits fresh air into the hive, lessening the chance for swarming, and giving renewed energy to the bees. It is also equipped with a feeder without extra cost.

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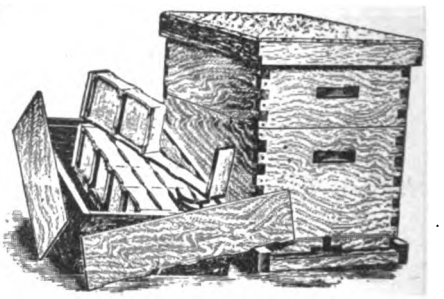


The Dovetailed Hive for Comb Honey

Why Not Give Us a Trial Order? **Satisfaction Fully Guaranteed**

We are also extensive manufacturers of **Dovetailed Hives and all other Apiarian Supplies** If you are in the market for supplies be sure to get our prices before buying elsewhere. We will mail our large illustrated catalog and **special price list** to any one upon request

KRETCHMER MFG. COMPANY, 110 3d St. Council Bluffs, Iowa

Christmas is Coming!

There is nothing more attractive for a Christmas Present than a good book. The new book—

"Our Backdoor Neighbors"

By FRANK C. PELLETT

Author of Productive Beekeeping and Staff Correspondent of the American Bee Journal, will delight your boy or girl, or any nature-loving friend.

This book is an intimate account of the personal studies of wild creatures, extending over many years of time. Every illustration is from a photograph from life by the author. A new departure in book-making, this book is unlike anything ever before offered to the public.

Charming, intimate and true to life are these descriptions, for the author has lived in close proximity to birds and animals, and shares their secrets. The stories he tells are vivid and fascinating, and many unusual photographs add to the value of this unique nature book.

Price, postpaid, $1.50

AMERICAN BEE JOURNAL, Hamilton, Ill.

ENLIST

In the growing army of honey-producers who are preparing to do their bit for Uncle Sam and the Allies, by endeavoring to secure a bigger crop of honey than ever before.

Prospects are bright for a bumper yield. Are you ready for it? Don't wait for prices to soar again, but place your orders now.

THE A. I. ROOT COMPANY

Medina, Ohio

Statement of the Ownership, Management, Circulation, Etc.

of AMERICAN BEE JOURNAL, published Monthly at Hamilton, Ill., for October 1, 1917.

STATE OF ILLINOIS, } ss.
County of Hancock. }

Before me, a Notary public in and for the State and County aforesaid, personally appeared M. G Dadant, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the American Bee Journal, and that the following is, to the best of his knowledge and belief, a true statement (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown above in the caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations,.

1. That the names and addresses of the publisher, editor, managing editor and business managers are:

Publisher—American Bee Journal, Hamilton, Illinois.
Editor—C. P Dadant, Hamilton, Illinois.
Managing Editor—None.
Business Manager—M. G. Dadant, Hamilton, Illinois.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give the name and names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock).

C. P. Dadant, Hamilton, Ill.
L. C. Dadant, Hamilton, Ill.
H. C. Dadant, Hamilton, Ill.
M. G. Dadant, Hamilton, Ill.
V. M. Dadant, Hamilton, Ill.
Jos. Saugier, Jr., Hamilton, Ill.
Leon Saugier, Hamilton, Ill.

3. That the known bondholders, mortgagees and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages or other securities are (If there are none, so state):

None.

That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also in cases where the stockholder or any security holder appears upon the books of the company as trustee or in any other fiduciary relation, the names of the person or corporation for whom such trustee is acting is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association or corporation has any interest, direct or indirect, in the said stock, bonds, or other securities than as so stated by him.

(Signed) M. G. DADANT,
Business Manager.

Sworn to and subscribed before me this third day of October, 1917.

(Seal) T. R. KLAY.

MARSHFIELD GOODS

BEEKEEPERS:—

We manufacture millions of **sections** every year that are as good as the best. The **cheapest** for the **quality; best** for the price. If you buy them once, you will buy again.

We also manufacture **hives, brood-frames, section-holders** and **shipping cases.**

Our catalog is free for the asking.

MARSHFIELD MFG. COMPANY, Marshfield, Wisconsin

EARLY ORDER DISCOUNTS WILL

Pay You to Buy Bee-Supplies Now

Thirty years' experience in making everything for the beekeeper. A large factory specially equipped for the purpose ensures goods of highest quality. Write for our illustrated catalog today.

LEAHY MFG. CO., 90 Sixth St., Higginsville, Mo.

ECONOMY

ECONOMY TO YOURSELF
ECONOMY TO YOUR BEES

Are two essential points gained by using

Dittmer Process Comb Foundation

Because it is the same TASTE, and the same SMELL, and the same FIRMNESS, as the COMB the Honey-bees make themselves. It is the more acceptable to them because it is not like their OWN COMB.

Remember, Mr. Beekeeper, that to you HONEY IS MONEY—then use

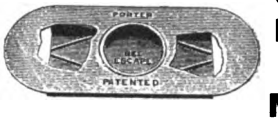
Dittmer Process Comb Foundation

Work for a full-capacity honey crop

Send for Samples—All Supplies at Prices you Appreciate

GUS DITTMER COMPANY, Augusta, Wisconsin

PORTER BEE ESCAPE SAVES HONEY TIME MONEY



For sale by all dealers.
If no dealer, write factory
R. & E. C. PORTER, MFRS.
Lewistown, Illinois, U. S. A.
Please mention Am. Bee Journal when writing.

FREEMAN'S FARMER North Yakima, Wash.

Successor to Northwest Farm and Home
69 YEARS OLD

If you want a descriptive and agricultural magazine, it will inform you all about the methods in the Pacific Northwest.
Send One dollar and have the magazine sent for one year. Cut rate of one-half price now on.

NOW IS THE TIME

Prepare Now for Next Season

Do not wait until your bees are out of winter quarters to order your goods.

PROSPECTS FOR 1917

Are for another big one. Lotz Sections are the best; they are perfect in workmanship, quality and material. All guaranteed. We want you on our mailing list.

Send for 1917 Catalog

AUGUST LOTZ COMPANY
Boyd, Wisconsin

ESTABLISHED 1885

We are still furnishing bee-hives made of white pine lumber; they are well made and will last. Our large catalog, giving full particulars about all bee supplies is free for the asking. Beeswax taken in exchange for supplies or cash.

J. NEBEL & SON SUPPLY COMPANY
High Hill, Montg. Co., Missouri

LEATHER COLORED ITALIANS

About April 1st I will again be ready to mail untested queens of my fine strain of Italians. I breed no other race. Choice tested and breeding queens at all times. Insure against a possible disappointment by ordering early. Satisfaction guaranteed. Circular free. Untested queens $1.00 each; doz. $9.00. Choice tested, $1.50 each. Breeder, $3.00 to $5.00 each.

C. S. ENGLE, Beeville, Bee Co., Texas

SAVE MONEY

By buying your supplies of me. All kinds of Bee Supplies and Berry Baskets, Crates, etc. Send for new **1917** list free.

W. D. SOPER
325 So. Park Ave., Jackson, Mich.

ALWAYS MAKE SURE THAT THIS TRADE-MARK IS STAMPED ON EACH PIECE OF

"Tide-water" Cypress

"THE WOOD ETERNAL"

THEN YOU BUY SAFETY (AND SATISFACTION) FIRST, LAST AND 'TWEEN TIMES

"ALL-HEART" GRADE FOR BEEKEEPERS' USE

Southern Cypress Manufacturers Association

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1230 Heard Nat'l Bank Building
JACKSONVILLE, FLA.

"When we receive your Honey
Return mail brings your Money"

The Fred W. Muth Co.

GET SERVICE LIKE THIS MAN

LAKE CITY, MICH., MAY 5th, 1917.

FRIEND MUTH:—Your letter with check for $146.20 for wax has been received. Thanks. I do believe you beat them all when it comes to quick returns for goods shipped you. I may have some more wax to sell after we get our cappings melted.

Yours truly, [SIGNED] ELMER HUTCHINSON.

We Want Immediately! Extracted Honey

We buy all grades of Extracted Honey. Large or small lots. Send sample and price. If price is right, we will buy. Partie who have Fancy and Number One Comb Honey write us at once. We will buy from 40 to 50 carloads this season.

BEESWAX

Send us your Beeswax. We pay highest market prices, and send you our check the same day shipment is received.

OLD COMBS

Make some spare money from the wax rendered from your old comb. We will render it, charging only 5 cents per pound for rendering, and pay you best market prices for the wax rendered.

Shipping Cases for Comb Honey

We are prepared to ship you the same day order is received any number of shipping cases. Several carloads are here now ready for buyers. Send your order in now before our supply is exhausted. We sell Lewis Beeware.

REMEMBER We remit the same day your shipment arrives. Read the letter above and be convinced that this is the house to send your shipments to. Try us.

THE FRED W. MUTH CO.

"The house the bees built"

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